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GLEANINGS A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS **BEE CULTURE** ILLUSTRATED SEMI-MONTHLY Published by THE A. I. ROOT CO. \$1.00 PER YEAR MEDINA, OHIO

Vol. XXIII.

MAR. 15, 1895.

No. 6.

STRAY STRAWS FROM DR. C. C. MILLER.

WHAT STATE SOCIETY of bee-keepers has the largest membership? Ontario?

VOGEL says the Egyptian bee is nearly tropical; and when 30° F. is reached, every bee in the hive is dead.

I'VE HAD VACATION for two weeks, even from bees, with almost nothing to do but sing. Makes me younger.

I FOUND some beautiful sections in Southern Illinois, stamped P. H. Elwood, Starkville, N. Y. Say, Elwood, you keep out of here.

I KNOW NOW, from that picture on page 167, what has become of Jake Smith. He got so puffed up with gas that he exploded. A warning for others.

THE LATEST cure I've seen for a bee-sting is from *Bienen-Vater*, a strawberry applied. I hope A. I. Root will no longer insist that straw-berries have no use.

HONEY-DEW HONEY has a defender in Stanley & Son, in *A. B. J.* And no wonder; for in 12 years they have raised 80,000 pounds of it, selling it for \$10,000.

WHAT'S BEST for a cushion, a right soft one? At the rate they're settling the question of the size of hives, it looks as if I'd have to sit on the fence the rest of my days.

THE BIENEN-VATER says queenless colonies frequently fill queen-cell cups with jelly just as if occupied by larvæ, and build them out, sometimes almost a finger long.

J. E. CRANE, in *Review*, leaves the big-little-hive question all mixed up. In his home apiary small hives are best, and large ones 6 miles away. The different conditions account for it.

SACALINE is a Russian plant that is having something of a boom as a forage and bee plant. Director Wilson, of Iowa Experiment Station, says in *Stockman* that it grows 8 to 12 feet high in a year, but he has no hope of its being a for-

age plant, because cattle won't eat it, even in Russia.

MIEL DE NARBONNE, or Narbonne honey, which sells in Paris at 60c a pound, Baist, in *Noerdlichen Bztg.* says, is a white honey from apple-blossoms. Phin's dictionary says, chiefly from rosemary.

CARAWAY, says V. Wuest, in *Noerdlichen Bztg.*, is a fine honey-plant in his locality. But Editor Vogel says, although cultivated largely in his region he never saw a bee on it. How is it in this country?

B. TAYLOR says, in *Review*, that he has 10 hives with 12 frames, 20 with 16, and 12 with 19 frames. After giving them a fair trial alongside of 10-frame hives, he has thrown them aside as useless.

H. L. JEFFREY writes, "Things that I knew for sure 25 years ago I have learned are quite different now, and it takes years to know for certain but very little of any thing." You've got it about straight, H. L.

A HIVELESS COLONY is reported in *Deutsche Imker*, hanging to the roof of a bee-shed. It hung in the form of a hemisphere, built nine combs, making them far larger than the standard German frame, which is less than the Langstroth.

"DO BEES PREFER new or old comb?" is a query in *A. B. J.* One replier thinks they prefer new, three think they prefer old; three "don't know," and the great majority think they have no preference. Here's a nut for the experiment stations.

ACCORDING to Baron Ambrozy, at the big Vienna convention, the four notable steps of progress since Dzierzon's discoveries are, 1. The extractor; 2. Comb foundation; 3. The queen-excluder; 4. The improvement in the manufacture of honey-drinks.

WHEN I READ on p. 187 how nicely W. S. Hart has every thing arranged, and when I remember what a nice fellow he is, I can't help wondering why a man of such good taste should remain a bachelor. Or has he such critical taste that no woman comes up to the mark?

A PROJECT is proposed to establish at Paris an apicultural syndicate, not to divert the honey-market to Paris, but to secure that for which there is no market, manufacture it into *eaux de-vie* and stamp it with the label of the society, to secure its ready sale on account of its purity.

"MR. FREEBORN's name was first brought prominently forward before the bee-keeping world through the Bee-keepers' Union." P. 183. Wasn't it the other way? I never heard of the Union till after Mr. Freeborn's troubles, and thereupon arose the Union. [I guess you are right.—ED.]

IT'S REFRESHING to see on page 183 that we're not going to be less enterprising than the Germans in the matter of adulteration. So much adulteration there is one of the reasons that thousands of the Rietsche press are in use, so bee-keepers can make up their own wax and know that it is pure.

DID YOU KNOW you can tell the time by a stem-winder in the dark? Wind up your watch, and an hour later wind it again, counting the clicks. If it clicks ten times, that means 6 minutes to a click. Then if you wind in the dark, and count 45 clicks, you'll know it's $4\frac{1}{2}$ hours since it was wound last.

"FLORISTS have so highly developed the rose that it has scarcely any pollen, and I am not sure but some kinds are so double they are entirely destitute," says Somnambulist. That's putting it very mild. Very few of the better sorts have a single grain of pollen, the stamens being all changed into petals.

"I DO NOT BELIEVE," says S. E. Miller, in *Progressive*, "there is one cellar in fifty that is a fit place to keep either comb or extracted honey." No; and in the fiftieth cellar it would spoil in this part of the country. In Colorado, where I'm told bread dries in the cellar, it may be all right, and in other dry climates.

HONEY SOAP, so called, says *Deutsche Imker*, contains no honey whatever. If you want the genuine article, something that will keep your skin soft and free from chaps, make it yourself. Take one pound common hard soap, add rain-water, place the earthen dish with the soap in a water-bath, or on a stove-mat, and boil till dissolved. Then add an ounce of honey, and continue boiling till the water evaporates.

THAT ARTICLE on p. 124 is very interesting; but that part of the heading which says, "Small hives more profitable," hardly fits. Boardman's 9 frames, $12\frac{3}{4} \times 12\frac{1}{4}$ inside measure, are equivalent to $10\frac{1}{2}$ dovetail frames. [The heading to which you refer was based on the cubic capacity of the Boardman hive. Nowadays the 8-frame Langstroth may be considered a small hive. This contains the same cubic capacity as the Boardman, and hence I classed it among the small hives. But when we compare Board-

man's nine frames to the Dovetailed hive's eight, the case is a little different. One would not think there was so much difference in the capacity of the two frames; but I shall have to acknowledge that I can't find any thing wrong with your figures. But, say; Boardman doesn't use 9 frames or the larger capacity because it gives more room, but because he thereby lessens the burr-combs.—ED.]



PACKAGES FOR EXTRACTED HONEY.

BARRELS FOR COLORADO NOT SUITABLE; WHY SQUARE CANS ARE BETTER; CANDYING OF HONEY A SERIOUS DRAWBACK; REACHING CONSUMERS DIRECT; A VALUABLE ARTICLE.

By R. C. Aikin.

I have read with interest Mr. E. France's article on this subject, in Feb. 15th GLEANINGS, page 129. I have a little criticism to make, but mainly wish to add to what he has said.

My criticism is in the use of barrels. Keeping the barrels in a dry place, and well coopered before using, is all right. It is a fact, that a barrel kept in a cellar or damp place, when filled with honey, will season and let the hoops fall off just as if it were empty. In the fall of 1887 I filled two 25-gallon white-oak barrels, they having been kept dry for months before, having eight hoops *hard driven* just before filling. These I brought with me to Colorado. In a few weeks after arriving here I found the honey—*candied too*—leaking out, and I could pull the hoops off with my fingers. Had the honey been liquid I might have lost the most of it. That the barrels can be made tight enough to hold the honey, by his method, there is no question; but a barrel shipped from Wisconsin *here* would not remain tight. A few days ago I received a 50-gallon barrel of sorghum shipped for Eastern Kansas. It may not have been *thoroughly tight* when shipped; but right in zero weather, and exposed to the cold, it began to leak so that I have had to drive the hoops on it.

I have, the past winter, liquefied and marketed between six and seven tons of honey. It was in 60-lb. cans. I sold it to consumers very largely, it going here and there all over the country, in lots of from one to four or five cans. Few of the purchasers knew how to liquefy, or *were fixed* to do it. Now, had I stored this honey in barrels, then opened the barrels and *spaded out* the honey to liquefy in other vessels, then returned to the barrels to ship, I certainly should have decided never again to produce extracted honey. But should I put it into cans to ship, then I must have two sets of vessels—an additional expense. If I had a trade

that would take honey in such large packages, and take it *at the same price as in cans*, and provided I did not have to ship *empty barrels* a long distance so that the freight would be more than the first cost of barrel, and if I did not have to liquefy before shipping, I could use barrels. If the barrel could be kept from year to year, and the crop sold at retail, it *might* be a cheaper package in the end, for it will last for years; but if I have to spade out the honey and put it into other vessels, I should build a wooden, tin-lined tank that would hold my entire crop, and do it at much less cost than the cost of barrels to hold the same; or, what would be better, a metal tank with a heating appliance, and liquefy the honey in the tank.

Just recently I had quotations from Fish & Co., of Chicago, and they quoted one-half cent less if candied. Now if, to get the best price for the honey, it be necessary to liquefy, the barrel is not the package. Mr. France says his barrels cost \$1.50 for 370 lbs., which is a little less than $\frac{1}{2}$ cent per pound. Our cans cost us $\frac{3}{4}$ of a cent per pound. The freight will be some lower on the barrels. I have forgotten just the difference, but it is not much; but if the honey is to be liquefied to get the best price, the liquefying is much easier done in the cans. It is not necessary to take the screw-cap off when melting. The honey will swell some; but the degree of heat necessary—and above which it ought not to go—will not swell the can sufficiently to burst or kink it. I have a tank that holds six cans, and covers the top of an old range that I purchased and fixed up for the purpose, and I usually leave the six cans in this and covered with water, from 24 to 48 hours. If the heat be regular, and as high as is safe, 24 hours will do; but with a slow fire, and the temperature often low, 48 hours is necessary. I have kept the caps screwed tight, and they did not burst a single can in melting several tons the past winter.

Now, while I should much prefer the can, and think it the cheaper in the end, I have a criticism to offer on it. A 60-pound can is too large. Two cans in a box make a package that is *just too heavy and awkward for one man to handle*. We can have them boxed singly at a little additional cost, it is true; but this is not the only objection. Many people will order by the 25, 50, or 100 pound lots. It is so natural and easy to order in 25 and 50 pound lots, or multiples thereof, that it is often done; and then we must ship more or less, or else correspond and explain. Two 50-pound cans in one box are abundantly heavy, and I think there is no valid reason why they can not be had in these sizes.

There are still other difficulties in the handling of extracted honey. If it would stay liquid we could afford to ship in large packages, and take somewhat lower prices; but when we get at best only three to four cents above

freights and packages, then have to cut half a cent or more because it is candied, it is hard on profits. I doubt whether one commission or wholesale house in ten is fixed for liquefying. If the wholesaler can not melt it, then it must go to the retailer candied. Is there one out of twenty-five retailers who knows how and is prepared to liquefy? I believe that, in the whole city of Denver, there is but one firm—and that not on a business street—that is in any manner prepared to liquefy. The Denver commission men tell me they can not sell honey well in 60-pound cans. If a 60-pound package is too large, the 400 or 500 pound barrel would be still worse.

Now, if extracted honey sells in the general markets, and holds its place with other sweets, it must be put in shape to *handle cheaply and easily*. If I were a wholesale dealer in the city, I would demand that the goods be put in packages that I could handle as other goods are handled, or I would pay only such prices as would give me a margin over the cost of such packages and getting it into them. What the commission man wants, and what he must have if the product ever obtains and holds its proper place in commerce, is the goods put in such shape that it will reach the consumer in original packages. Until this is done we shall continue to do as we are doing—sell to consumers direct.

The producer of grains, grasses, and vegetables, and all manufactured goods, can sell his products at any and all times. There are regular dealers, and the necessary appliances for handling all these things. If the individual farmer had to advertise his products, and sell and ship to those who may want and need his product in other parts of the country, as many bee-keepers now sell their product, how much would he get out of his stuff? The city dealer does not go to the farmer for his products, but goes to the commission and wholesale houses. When he finds what he wants, it is in such shape that he can buy as much or as little as he wishes.

I suppose that C. F. Muth is thoroughly equipped for handling honey and putting it in retail packages. He, no doubt, can use large quantities of honey in large cheap packages; but the general produce-dealer can not do this, and must sell in original packages. I have the past winter, as previously stated, sold several tons of extracted honey. I could not sell it to commission houses nor to retail dealers. Why? Just ask your grocer to sell in *your own market, in cans and barrels*, and you will know why. The wholesale houses must have the honey in the very cheapest large package, and then put it into his own retail package, or the producer must put it into retail shape and all properly packed in regular packages before it leaves the honey-house.

Here again comes that snag of candying, and

also the fact that we must have an expensive sealing package. If the package be glass, we have increased freights. Retail packages that do not seal cost from $1\frac{1}{2}$ to 3 cents per pound; and those that seal, from 3 to 5 cents per pound. Add to this the freights, and the getting of the crop marketed is as expensive as raising it. Then after we have done all this, and the honey is marketed in nice shape, it candies before the consumer gets it. Some of our honey candies so quickly that, if it were transported long distances, it would be solid before it got there. So you see at every turn there is something in the way. With these difficulties in the way we must be content to let it remain as it is—extracted always at a disadvantage, and comb only a luxury—or find some better method of marketing.

We must lessen the cost of retail packages; ship so that we get low freights and commissions, and put the goods up so that the consumer gets it in the original package. What this package shall be I do not know; but certainly if we could put it into cheap tins, and seal, say, in something like the square oyster-can—a package that is so cheap as to be thrown away, as are those of all fruits and other canned goods—then with each can printed instructions to the consumer, that each one who uses it will liquefy for himself, we could then afford to raise extracted honey; and not only that, but find it successfully competing with other sweets, and holding its place. I could put up a large tank, and heating appliance, to hold a big crop; then if I get the crop I could buy the cans, and pack for market. The purchase of cans need be only what is needed. It would then make no odds if the honey did candy; for it would remain so until the consumer got hold of it. It would not bring quite so high a price in the retail market; but the intermediate expenses would be much less, and so benefit both producer and consumer.

I do not think that we shall altogether do away with glass; but the main crop must be in a very cheap package, and go to the consumer candied, the glass and fancy packages being left for the fancy trade. If this can not be done, then the trade in extracted honey must always be a very uncertain thing until it can be produced at a price less by considerable than the price of sugar. I say less than sugar, because of these difficulties in the marketing of it. It would be quite different if we could keep and handle the honey as easily as we do sugars. With a simple cheap package, and the goods sold to the consumer in the original package, it will become more and more of a staple and more and more a common article of diet.

Loveland, Colo., Feb. 26.

[This is one of the best and one of the most comprehensive articles on this subject that we have ever received, and I commend its careful reading to every producer. Barrels, whatever

may be their advantage in the Middle and Eastern States, are not suitable for a large part of the West, where the climate is dry, like that of Colorado and California. Tin or glass packages, or something that will not shrink, must be used; and, besides, as friend A. well says, they are more suitable for liquefying. We have tried spading the honey out of barrels; and we can't afford to buy in barrels, spade out, and liquefy, and run into smaller cans, and make any money out of it. But instead of spading, we find it cheaper to set the barrel in a large tub of hot water, and keep the water hot with a steam-pipe. But, few have the steam, and so the spade process is the one usually employed. But honey in square cans can be liquefied easily by any one. We set ours in a coil of steam-pipe.

We must, as producers, have our packages suitable for the honey-market, and, so far as possible, for the consumer. If it is true, that honey in barrels must be spaded out by the average commission house, and if he can't do it except at a loss, sooner or later he is going to make the producer pay for it in a reduced price. As square cans are so near the cost of barrels, per pound, it will be seen that they have a big advantage, not only in this one matter of candying, but in the fact that the bulk of honey can so easily divided upon the multiple of 60 lbs.—Ed.]

RIPENING EXTRACTED HONEY.

SHOULD HONEY BE EXTRACTED THROUGH THE SEASON, OR LEFT ON THE HIVES TO BE EXTRACTED AFTER THE SEASON?

By E. France.

Mr. E. France:—Having read your articles in the late issues of GLEANINGS with much interest, I should like also to get your views, if I can, on one question that I have had upon my mind for some time. I believe Mr. A. I. Root advocates letting the bees cure the honey, leaving it in the hive until the latter part of the season, so it may cure well. It has also been our experience, that honey left in the hive toward late or until fall, is better in all respects than honey extracted, say, in June. I believe that you and a good many others extract at intervals during the whole season, commencing as early, even, as apple-bloom. Now, my question is, How do you manage to turn out a good article, extracting so early? or, how do you cure your honey? I should like to make or get out honey of the best quality, and am at a loss to know how it can be done without its being cured in the hive. I think I have seen in your writings that you put it in kegs as soon as extracted. I have read that curing in open barrels or crocks would be about as good, but I don't know. Do you extract any but that which is capped over? G. A. LUNDE.

Stoughton, Wis., Feb. 17.

[Mr. France replies:]

My friends, this is a big question; and an answer that would be all right for one place could not possibly work in some other location. Some locations have long steady flows of honey; others, a short heavy flow, a sudden stop, and then

all is over. The last is my condition. We will look at it from my standpoint, and let the other fellow answer for himself. Right here we never have any honey for the bees to work on to more than make a scant living until the middle of June. We have no fruit-blossoms to amount to anything. Dandelion is the first for earliness. When the dry seasons have not killed the white clover, that will give the bees a living until about the middle of June. There may be a little honey gathered in the fall, and a little in the spring before the middle of June. But it is *all dark*, and but little of it. But one pound of it will materially darken 100 lbs. of white honey, so it is very important to go over all the combs and take out every ounce of this dark honey, at the commencement of the white-honey flow, so we have extracting No. 1, or, as we mark it, one X. It is dark, and most of it goes to the baker's.

Now we have emptied our combs of the dark honey. But we have not washed out the combs; and, do the best we can, there will be enough of the dark honey left to shade. The next extracting is No. 2 as to color. If the honey is coming in pretty fast, the combs will be full in a week or ten days. If the weather has been fair, and not much rain, the honey will be thick and good—about two-thirds capped over. We must get this extracting out, for the same reason we did the first, for from now on until the close of the basswood season, we get our whitest honey; and now, if we are to get a good crop of honey, the bees are doing their best, and will fill their combs once in a week. Assuming that the bees have three sets of eight L. frames, or their equivalent in some other frames, if we empty the combs once a week we can go right along with the second set of extracting-frames. If it is a good season they can be extracted three times yet, making five extractings in all. The honey will be good if the season is not wet. If it rains much or often, then we have to wait longer between extractings.

We will now see how it would work to wait until the close of the season, as above, extracting thrice during the heavy honey-flow. We shall have to empty 6 sets of L. frames, if we wait until the close of the season; or, in other words, we shall have, at the close of the season, including the brood-nest, seven stories of combs. How about the wind blowing them over? How many of us are prepared to keep over that many empty combs, if we had them? If we have 100 or more colonies, we shall have to have a big pile of extra supers and extra combs. If we extract at the close of the season, the bees will be cross, and get every one on the steal, and we shall have the biggest robbing-scrape you ever saw, unless extra care is used. No greenhorn can do it; and how about the empty combs, after they are extracted, all sticky with honey? What are we to do with them—put them away in that condition, or

give them to the bees to clean up? If the bees are to clean them, not one man in ten will do it without getting the bees to robbing. Well, what are we going to do about it? For my part I am going to extract while the bees are gathering honey. I get no fall honey. My bees have to winter on basswood honey, and we must quit extracting in time for them to put up their winter supplies. We put our honey in barrels, right in the yards, as it comes from the combs; drive in the plugs, take the honey home, and deposit it in our honey-house. We don't loosen the plugs. We don't extract thin honey. We wait for it to get thick enough to keep well. We don't wait until all is capped, but only from one-half to two-thirds. When the weather is very dry, honey may be extracted as soon as gathered, and be good. Of course, when we are extracting we get some honey that was gathered the same day, and some the day before; but how can we help it? If it averages thick and good, and will keep sweet, that is all we can expect. We sometimes have honey that sours more or less. We don't sell that for first-class if we know it. The bakers can and do use sour honey, and they buy it. They say it takes more soda or less acid to make it work right.

Platteville, Wis.

MANUM IN THE APIARY.

SECTION CARTONS; WINTER VENTILATORS.

By A. E. Manum.

"Good-morning, Charles. It seems to me you are out in good season this morning."

"Yes, Manum, I find myself confronted with a little difficulty this morning, and I have called to consult with you. As you know, our cartons came last Friday afternoon, and this (Monday) morning my helpers all came in good season, as we were intending to get my honey all ready to car with yours Tuesday, as you and I had agreed upon, and I learn the freight-car we had ordered for the purpose is already at the station in waiting for us. But upon going to work putting the sections of honey into the new cartons I found that the latter were too small. We opened all the boxes, and tried some from each box, and found all alike—too small—and I have come over to see if yours are likewise too small."

"No, Charles, mine are just right; and, as you see, my honey is all crated and marked, and ready to ship."

"Now, that is very strange, Manum. Your cartons and mine were ordered at the same time, and of the same firm. Our sections are just alike, and my cartons are too small, while yours are just right. Well, here; I have brought over 20 of mine for you to examine."

"I declare, Charles, they are too small, sure enough. That is too bad. We have waited

and waited for the manufacturers to get them out until we have lost the best of the market, no doubt, as it has been my experience that the first honey put upon the market usually sells for the highest price; and, furthermore, we have arranged to ship our honey together by *freight*, to save expense, rather than ship separately by express. But here we are—mine is ready, while yours is not, and is liable not to be for some time if you have to order more cartons made, which I can see no other way for you to do under the circumstances. It is very unfortunate, to say the least, as it is a damage to us both, especially to yourself."

"Now, Manum, what would you advise me to do?"

"Why, Charles, I would telegraph the parties that these cartons are too small, and to make you another lot at once."

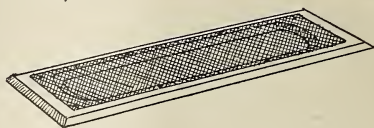
"Yes, that is my only way out of the scrape; and in the mean time you might as well ship your honey at once, and not wait for mine; and I will see the station agent on my way home and countermand the order for the freight car, as you will doubtless ship your honey on the butter-car to-day."

"All right, Charles; that is our best way out now, as the matter stands. Hereafter, Charles, I think it will be policy for us to order our cartons early in the season, and of the *old firm*. They have always been prompt and reliable. Suppose we order one or two thousand more than we need the present season. They are not very expensive, and are something that will keep without shrinkage. I have learned, Charles, by sad experience, that it is bad policy to leave an old and reliable firm—such as the A. I. Root Co., for instance—and dodge off on some side branch, expecting great things. Nine times out of ten the tender branch will let us down with a *thud*, as you have just been let down."

"Yes, that is right, Manum—just right. I want to know what you are doing with those pieces you have piled up here on your bench."

"Oh! these are for winter ventilators, to take the place of quilts; you know that quilts are more or less a bother. To begin with, the bees will cover them with propolis in a year or two so that they are no better than enameled cloth or boards, to allow the escape of moisture; and, furthermore, the bees gnaw holes through them in so short a time that I find it quite an expense to renew them every two or three years; and, again, if the wind blows—as it usually does—when packing or unpacking the bees, these cloths will be scattered all over the yard if left on the ground or a hive; and, also, by the use of quilts, when putting them over the frames the whole brood-chamber has to be uncovered, thereby disturbing the bees and permitting the warmth to give place to cold air, since we have always chosen a cool day to pack the bees, owing to the fact that, in a cool day, they are

more apt to be compact and at the bottom of the frames, making it much more convenient covering them with the quilts than in a warm day when the bees cover the top-bars. But with an arrangement made thus I can not only



MANUM'S WINTER VENTILATOR.

pack my bees in less than half the time that it would take with quilts the old way, but they are much better, as they will last a lifetime, and cost no more than cotton sheets—called quilts. To use them, all I have to do is to separate the two honey-boards two inches apart and place these ventilators between them and cover all with the thick cushion."

"Yes; but, Manum, suppose one does not have his honey-boards—cover to brood-chamber—in two parts as you do; how can he use these ventilators?"

"Oh! just simply by shoving the board to one side and placing the ventilator at one end instead of in the middle of the brood-chamber; and besides, Charles, they can, in case of emergency, be used as feeders. By placing them with wire screen downward the space can be filled with moist sugar, which would keep a starving colony alive for a day or two, or until they can be fed more abundantly."

"In this case, then, what are you going to do with your old quilts?"

"Charles, when I visited our friend J. E. Crane last spring I learned what to do with them, whereby I am putting them to good use by using them for smoker-fuel. I can tell you that, with my Crane smoker filled with well-propolized rags, I can drive bees home or mad dogs out of the streets."

Bristol, Vt.

REPORT OF THE CALIFORNIA STATE BEE-KEEPERS' ASSOCIATION.

By J. H. Martin.

The California State Bee-keepers' Association held its annual session in the new Chamber of Commerce, Los Angeles, on the 5th and 6th of February, 1895. After the preliminary routine the subject of marketing honey was taken up for general discussion. The trend of the discussion was toward coöperation and the establishment of exchanges for the purpose of handling honey. Fruit exchanges were proving a success, and why not have success in the sale of honey also?

Mr. McIntyre seemed to have an exchange of his own, which was working satisfactorily, as he always sells his honey for not less than 6 cts.

per lb. His plan is to hold his honey until he can get his price.

Capt. Wood sold the most of his honey in the home markets, and would not sell for less than 6 cts.

There were some pertinent remarks in relation to the commission men and their practices, and it seemed to be the desire of the bee-keepers to get along without the commission men, and to get into a more satisfactory way of disposing of the product.

In the afternoon session Mr. Brodbeck read a paper upon the coöperation of bee-keepers, which was followed by a long discussion.

SELLING HONEY ON THE COÖPERATIVE PLAN; GIVING COMMISSION MEN THE GO-BY.

Mr. Mellen cited the fact that a coöperative store had been organized in the town of Acton, which was a success. Coöperative stores are being established all over the country. These coöperative associations act together; and if the sale of honey could be effected through such organizations we could secure better prices for it. At present we are at the mercy of the capitalist, and the coöperative plan is the best way out of our difficulties.

It was stated that plans were in progress toward forming some such organization in Los Angeles for the purpose of handling honey; and if the coming season should be a bountiful one, as the abundant rains indicated, it would be a good season to start such an organization. The exchange, or whatever it may be named, should have an officer at the head of it. Every producer who would support the organization should state the amount and quality of his honey, and attach his name to every package. The officer of the association has samples only in his hands, and secures orders from these samples. This obviates the necessity of storing large amounts of honey in any given warehouse, with its attendant expense and risks.

Bee-keepers, instead of putting their honey into five-gallon cans exclusively, should use a greater variety of packages. Some recommended one-pound cans, and all the way up to the standard five-gallon.

Prof. Cook said that great corporations held together as one man. The laboring men should in like manner hold together. He believed the time was coming when the laboring men would do this, and better prices would result. Have patience, and agitate. The producers are too suspicious of each other, and so scattered that the coöperative plan had not been adopted. The fruit-growers had been compelled to organize, and the result is better prices for their fruit. It needs enthusiasm and some self-sacrifice, perhaps.

The great fundamental principle is, to first establish a good price and stick to it. The fraternity were greatly handicapped by so many needy bee-keepers who are obliged to sell their honey in order to purchase the necessities of

food and raiment. If an organization is formed it must have a little capital to enable it to advance some money to this class of producers.

Capitalists are afraid of coöperation, and will hinder its establishment if possible. The professor did not believe in the mushroom growth of such organizations. A slow growth gives it a more substantial footing.

Mr. Touchton said that California honey had to compete with the whole United States and Cuba. He thought that an exchange, however small, if once established, would grow. This would lead to putting up honey in such packages as the public demanded. Each producer should keep his own brand on his packages, and thus make a reputation.

Mr. Wilder thought that California honey should bring as good a price as eastern, and he proposed to take a carload east and sell to the consumer. He believed that but a small portion of California extracted honey found its way to the tables of eastern consumers; it is used largely in manufacturing establishments; and, coming in competition with sugar, when the price of honey advanced above a certain figure, sugar is used instead.

Mr. Flory said that Central California bee-keepers were ready for coöperation. They were subject to low prices, high freight rates, and an unjust tare on all of their packages; upon a crate for comb honey weighing only 4 lbs. they were obliged to allow 7 lbs. tare, or an actual steal of 3 lbs.

An expression of the meeting was taken in relation to organizing on the coöperative plan; 15 arose in favor of it and 6 against, while there were several not voting. The 6 had facilities for storing their honey, and were able to keep it until their price, 6 cts. per lb., was obtained.

BEE-PARALYSIS SCARCE IN CALIFORNIA.

The next subject under consideration was bee-paralysis. The opinions upon this malady were somewhat contradictory. Locality had much to do with the opinion in relation to the cause. The fact was brought out, however, that there were but very few cases of paralysis in California. Several bee-keepers, owning their hundreds of colonies, had observed only three or four cases at any one time in their apiaries. The disease usually disappeared when new honey began to be gathered.

Mr. Touchton gave a lecture upon practical bee-keeping, demonstrating his remarks with a hive and all tools for management. There were some criticisms upon some of the methods; but on the whole Mr. Touchton, being a practical bee-keeper of many years standing, his ideas were generally indorsed.

The evening session commenced with an excellent annual address by Pres. A. J. Cook.

Several of the points brought out in the address were discussed. The so-called new bee-disease, also the controversy between fruit-

men and fruit-dryers and bee-men. City ordinances against producers selling their own products were pronounced unconstitutional.

A paper upon California bee-keeping was read by J. H. Martin, after which there was a social half-hour. The convention was favored with the presence of the Hon. J. M. Hambaugh, of Illinois, and Mr. Jacob Alpaugh, of Canada.

Wednesday morning the swarm of bee-keepers were a little tardy about convening. Mr. Mellen read a paper—Money vs. Honey. Mr. Mellen touched upon financial things generally, and thought that a better financial policy for the nation would result in financial accumulations of the bee-keeper.

The use and abuse of smoke in handling bees was next treated by Mr. Mendleson. This called out quite a lengthy discussion, all tending toward careful handling, clean hives, with a clean apiary.

The fact was also noted that bees, while gathering honey, are more vindictive than under the same conditions in the East.

The discussion led into the feeding of bees. The past season had been one in which the bee-keeper could experiment to the extent of his ambition. Honey, diluted honey, sugar (refined and raw), beet sugar, and Chinese sugar, had all been used with success. A few gave preference to diluted honey.

The methods of feeding were as various as the kinds of feed. The most rapid way to get over a large number of hives was to pour the feed into empty combs and place them in the hive after dark.

Capt. J. M. Wood next brought in an old red weather-beaten hive, and lectured upon the advantages of his method of management. His frame was about the size of the Gallup. His tools to manipulate the hive were of his own invention and manufacture. A scraper, something like an intensified putty-knife, seemed to be a very handy tool. His smoker was the old-style Root Simplicity, improved according to Wood, and in which he used a ball of sacking for fuel. His honey-knife was also constructed with an abundance of metal that would hold heat, when warmed, for uncapping combs. For heating the knife a copper boiler of unique construction was used. Upon an expression of the meeting being taken, Messrs. Wood and Levering favored the Wood system, while all of the rest of the bee-keepers favored some other way.

The Bingham honey-knife was also indorsed as the standard knife.

Mr. Cory exhibited a knife invented by himself. This was also a heavy knife, and a trifle curved at the point, long enough to uncup a L comb at one stroke. The method of cutting down and then up was illustrated.

The question-box was at this point introduced; and in answer to the question as to the best average of honey in the best season, Mr. McKin-

tyre said his opinion was that the average for a number of seasons in the best apiaries was 75 lbs. per colony.

The afternoon session was devoted to the election of officers. Prof. Cook was unanimously reelected President.

J. H. Martin was reelected Secretary; H. E. Wilder, Treasurer.

Mr. McKinney,	Vice-pres. for San Bernardino Co.
Mr. Brodbeck,	" " Los Angeles
Mr. Flory,	" " Kings
Mr. Taylor,	" " Riverside
Mr. Touchton,	" " Ventura
Dr. Gallup,	" " Orange
Mr. Stubblefield,	" " San Diego

Reports of committees followed.

It was voted to pay the secretary \$25 for services.

Also voted to pay from the treasury the sum of ten dollars to the Langstroth fund. This was further increased to \$16.60 by a collection. Dr. Gallup, an old-time bee-keeper, and now living in Santa Ana, then made a few stirring remarks, proving that, though out of the business for years, the bee still could arouse his enthusiasm.

Upon motion of Mr. Brodbeck, the Central California Bee-keepers' Association was recognized as co-workers with us; and their action in sending such an able representative as Mr. J. F. Flory was commended.

The Association then adjourned to meet at Los Angeles at the call of the executive committee.

PROF. A. J. COOK, PRES.

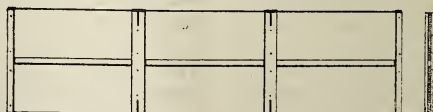
J. H. Martin, Sec., Bloomington, Cal.

SEPARATORS.

THE ADVANTAGES IN THE USE OF NARROW SECTIONS; CLEATED SEPARATORS.

By B. Taylor.

Editor Gleanings:—I send you to-day one of the separators I have been using for four seasons. In looking over your price list I noticed that you mention a cleated separator in which the entire bee-space is in the separator, thus leaving the honey in the section two bee-spaces thicker. You will notice that my separator has



TAYLOR'S SEPARATOR.

only a half bee-space in it; and the reason for this I will tell further on. I have often put myself on record as having no use for separators, always having the combs straight enough to crate conveniently without them; and I always viewed cutting a super up into a little separate room for each section (which the separators in use did) as discommoding the bees, and I still

think so. But several years ago I discovered the great value of empty drawn combs in sections, for getting a large yield of white comb honey, and I found it impossible to get such combs filled and capped evenly enough to make their use possible. So I began to experiment on a separator that would obviate the objections I had to those in use. I wanted a separator that would leave a free passage for the bees, in the center between each section, and thus avoid partitioning each section off by itself, with a solid partition wall. This I accomplished by making the separators of two thin strips, and cleating so as to leave a scant $\frac{3}{8}$ space or slot between them lengthwise.

Now, there was another thing I wanted; and that was, to use narrow sections—some not more than $1\frac{1}{2}$ inches wide. I had been using these narrow sections for twelve or fifteen years, and I liked them so well that I could not think of abandoning them. I had changed all my supers so as to use sections 4×5 inches, and $1\frac{1}{2}$ wide. These sections, when filled without separators, come nearer a pound than any others I ever used; and let me say here that narrow sections will vary far less in average weight than wide ones. But my narrow 4×5 sections, with separators between, so a bee-space would have to be taken from both sides of the combs, would leave them but one inch thick, and they would not weigh $\frac{3}{4}$ of a pound, and this would not do. So I began to study a way out of the difficulty. My first thought was to cleat the separators like yours, with a whole bee-space in the separators; but from theory alone I saw this would not do, for two reasons. First, the combs would have $\frac{1}{4}$ inch added to each side, and would weigh more than a pound. I could have remedied this by making the sections $1\frac{1}{4}$ inches, or less, wide; and as I loved narrow sections I would have gladly changed in that direction; for with the whole bee-space in the separators I could have all four sides of the section the same width, which would be an advantage; but the second reason could not be settled so easily; for, with a full bee-space in the separators the combs would be built as thick as the sections were wide. The edges would be built right up to the cleats on the separators, and would be sealed more or less to them, and would break the cappings on being removed. I tried enough to know that this one fault would render separators with full bee-spaces in them impractical.

There is another objection that would prevent their use. The combs being as thick as the sections, in crating, the surfaces of the combs would touch together, chafe each other, and start the honey to leaking. With the aid of the comb-leveler I could dispense with separators in using drawn combs in sections; but I have now used them, like the one I send you, four seasons, and I like them so well I probably shall never fill another super without them. I

do not use them between every section—only between every two. This gives perfect sections that weigh a scant pound each when filled. The honey on both sides of the section comes within $\frac{1}{8}$ inch of the edge of the section, and is never broken in removing the separator, and the surfaces are $\frac{1}{4}$ inch apart in crating. In crating sections filled between common flat separators, the surfaces of the combs are $\frac{1}{2}$ inch apart, and require a larger crate for the same number of pounds.

You will, no doubt, ask why I make my separators $\frac{3}{8}$ thick. I tried thin ones of wood, and the bees soon gnawed and spoiled them. Those $\frac{3}{8}$ thick cost but little more, and, made like the one sent, will, with proper care, last a lifetime, and prove cheap indeed.

I see narrow sections are attracting the attention of bee-keepers. They have so many good points, when tried, that they will yet cause the $4\frac{1}{4} \times 4\frac{1}{4}$ section to be abandoned, for they are too small to hold any thing near a pound, if only $1\frac{1}{2}$ inches wide, and this is the extreme width of the coming section. The combs are fastened to all sides of $1\frac{1}{2}$ sections much better than to wide ones, and ship more safely with the separator I use with its slotted center, so the bees have free passage from comb to comb, without having to leave passages in the corners of the combs; and with narrow sections the combs are made solid to every side, and nearly every cell will be sealed; and these sections, with their larger surface, and filled to $\frac{3}{8}$ inch of their edges, solid fast on all sides, and every cell sealed, make a section that leaves the wide $4\frac{1}{4}$ section, with its sunken surface and imperfect capping and fastening, far in the shade.

Some years since, Mr. Keys, of the firm of James Forncrook & Co., visited the Forestville apiary. I took him into my honey-house, and showed the well-filled sections of $4\frac{1}{4} \times 4\frac{1}{4}$ size, $1\frac{1}{8}$ inches wide, and the 4×5 $1\frac{1}{2}$ sections, and he agreed, without argument, that the latter made a much finer appearance, and looks go a long way in selling comb honey. So impressed am I with the superior advantages of the larger and narrower sections that I would not accept as a gift a future supply for all time of $4\frac{1}{4} \times 4\frac{1}{4}$ and $1\frac{1}{8}$ sections.

Forestville, Minn., Jan. 22.

[I am well aware that there are advantages in the use of narrow sections. The combs are filled out better, honey ripened perhaps better, and customers will take them, because, while they appear to be as large as the regulation $1\frac{1}{8}$, they are cheaper. In Canada, the 7-to-foot and $1\frac{1}{2}$ section rather take the lead; in this country, $1\frac{1}{8}$: in England, full two inch, but all $4\frac{1}{4} \times 4\frac{1}{4}$ in size. But you probably do not overlook the fact that, while you may be able to get more for your 4×5 sections, as a general rule they list in the market quotations, or did so, at least, until they were driven out of the market, from one to two cents lower than the regular $4\frac{1}{4}$ size.

I believe your separator is a good thing. It

certainly would greatly improve the T super; but cleated separators, you are probably aware, are not new. In Nov. 1st GLEANINGS, 1888, p. 333, Oliver Foster set forth their advantages. His article was accompanied with an engraving which, for the convenience of our readers, we now reproduce.



You will notice it is not exactly like yours, but it embodies the same principle. The cleats on both sides are half a bee-space thick.

Mr. J. E. Crane, of Middlebury, Vt., is another bee-keeper who has been enthusiastic, I believe, in the use of the cleated separators. When I called on him in 1890, on that bicycle trip, he showed the advantage of this sort of separator in connection with sections having no bee-ways or openings, the bee-spacing being entirely provided for by separator-cleats.—Ed.]

CALIFORNIA ECHOES.

By Rambler.

At the recent California State convention of bee-keepers, Prof. Cook called out quite a number of test votes. In the use of quilts of various kinds over the frames, 19 had used them, and now only 9 of the 19 use them, showing that 10 had discarded the useless, mussy things.

California bee-keepers are invited to make exhibits of their products in the Chamber of Commerce. An attractive display here of several feet of floor space would be a standing advertisement of California honey. People from all portions of the earth are visiting the Chamber daily.

The bee-escape was considered not so much of a success here in clearing an extracting-super as it might be. The escape clears the super of bees; but the honey, deprived of its warming factor, gets cold during the night, and is extremely hard to extract. What we want is something to clear the super as quick as a brush would do it, or from three to five minutes.

Mr. Brodbeck had one of his hives in the Chamber of Commerce. Mr. B. has taken a step in the right direction. He uses the Dove-tailed hive with Hoffman frame; but hive and frame are shallower than the standard, by an inch or more. That's right, Mr. B. You will soon progress to the use of the shallow divisible brood-chamber.

The rainfall up to date in the San Bernardino Valley amounts to 17 inches. This, with a few inches in March and April, will probably insure a honey crop. But even after profuse rains, there are sometimes climatic influences at work to prevent the secretion of nectar. These extraordinary influences, however, appear so seldom that plenty of rain gives great buoyancy to the spirits of the bee-keeper.

"Skim-milk queens" was a very happy term applied by Mr. McIntyre to those queens reared under the forcing plan, and where the royal jelly is thin and scarce. Skim-milk queens and successful honey production do not work well together.

In this valley, thousands of acres will be planted to what has hitherto been considered a worthless plant—canagrie, with the newly discovered tanning properties. Reliable authority claims that it does not yield honey. Perhaps, with thousands of acres, the bee will find a sustaining forage upon it.

In these days of foul brood, bee-paralysis, etc., it behooves bee-keepers to be very careful about introducing queens, honey, or second-hand hives into or near their apiaries. Our most successful bee-keepers breed nearly all their own queens, and would not feed honey bought up promiscuously, under any consideration. A pastor of a Disciple church informed me that such a purchase of honey, and a feeding of it, inoculated his whole apiary of 50 colonies, and he lost them all. His experience was brief but pointed—spent 400 dollars on bees; never received a cent in return. Moral: Be careful what you feed your bees.

RAMBLE 128.

AT BLACK DIAMOND.

By Rambler.

Mr. Jones, collector for the Pacific Gas Improvement Co., a few evenings after our call upon his quarrelsome bees, reciprocated, and sat down with us by our camp-fire. We found Mr. Pryal an adept at keeping up the flames. We had been chaffing him some about the raw and foggy condition of the nights around the Bay, and had urged him to visit the more salubrious clime of our sunny Southland. Of course, like a true native son his Oakland possessed the best climate in the world; and then he would emphasize his remarks by throwing another armful of brush on the fire. Where nature requires so much aid in August to keep up a comfortable warmth, it is indeed pleasant to find such an efficient helper.

Around the fire the conversation circled; and bees, best locations, hunting deer, bear, and even hogs and their profitable culture as a side issue with bees, was discussed. Mr. Jones thought a hog-ranch out in the free air of the country preferable to those everlasting sidewalks and tall brick buildings. A good apiary in connection with it would just profitably round out the season.

Pryal and Wilder held a grand idea that, when prices in pork and honey ruled low, the hog might be raised profitably for its bristles. For instance, a tooth-brush is sold for 15 cents and upward; a good-sized hog, with his back well cultivated, would yield bristles for a

thousand tooth-brushes. In view of the bonanza before us I had only one suggestion to make; and for the moment I was inspired to put it into rhyme, as follows:

That is right, Bro. Pryal;
On the fire put a log,
And by the cheerful flames
We'll view the festive hog.
You may make him into bacon,
Or fry him in the pan,
Or his bristles use for brushes,
But here's a better plan:
Your highfalutin schemes,
Like mice and men, will fail,
Unless advice you take—
Make whistles of his tail.

This ended the hog discussion for the evening, and our convention resolved to adjourn. It

As we climbed and climbed the moderate mountains, the landscape grew behind us, and we were soon at such an elevation that the cities, the bay, the islands within the bay, the Golden Gate, and the broad ocean, were spread out before us in one grand panorama; and when we consider that a genial clime touches with its magic wand the vegetable world, and gives one round of growth and bloom from one end of the year to the other, it is no strange thing that people enthuse over the wonderful climate of California.

We are now in Contra Costa Co., and we drop down on the north side of the mountains; and 18 miles from Oakland we halt for a few days in Walnut Creek, a pleasant little town. Hard times seemed to be knocking at the doors of the majority of the people. The saloons, how-



PUMPING WATER TO SPRINKLE THE HIGHWAYS.

was hard upon 12 o'clock. Mr. Jones disappeared in the darkness with a kind farewell, and we made an opening in the fog and sought our tent.

The days sped by so full of duties and pleasures that a week elapsed ere we were again ready to proceed on our journey. Our evenings of social converse with bee-keepers, and especially in the Pryal home, when the family gathered around the hearthstone, and, aside from the words fitly spoken, there was vocal and instrumental music in the air—those evenings will not soon be forgotten; and on the 11th of August, when we took our departure, and climbed the hills that rise abruptly in the rear of Temescal, I cast glances below and exclaimed in heart-felt tones, "May the shadows of all the Pryals never grow less!"

"Amen!" says Bro. Wilder.

ever, seemed to be doing a good business—even better than the churches. Spending Sunday in town I patronized the little M. E. church, and found 40 in attendance. At the close of the services there seemed to be a greater crowd and more lively times around the saloons. The pastor was young and earnest, and dispensed the word with ability. Still, there was apathy in the outside crowd, that left the church with a meager attendance.

Spaniards and Portuguese were numerous here, and the Spaniards often indulged in a barbecue. We camped near the scene of their festivities. In a shady nook on the banks of the little creek the Toro Club assembled occasionally to eat the face off a bull's head and crack a few bottles of vino.

The master of ceremonies, the barber of the town, came around to prepare for one of these

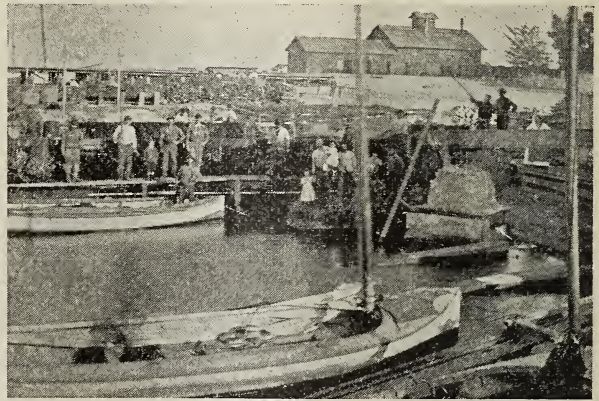
gatherings. We had noticed a deep hole in the ground near the creek, and curiously wondered what it was used for. It was 4 feet deep and 3 feet in diameter. Our barber built a fire in the bottom of the hole, and kept feeding it with hard-wood chunks until there was a thick bed of coals. A bull's head was then carefully rolled in a burlap sack, and dropped upon the coals. Immediately the head was covered with dirt to the depth of about three feet. From 16 to 24 hours was considered long enough to cook the head. It was then taken out piping hot. The Toro Club would assemble around a rustic table, under the walnut-trees, and enjoy the festal board.

Our camp was furthermore enlivened by its proximity to the cooler, made necessary by the aforesaid saloons. The cooler was very appropriately located near a huge water-tank. It was the duty of the waterman to put his three docile horses to the turntable pump and fill the tank regularly every day, and as regularly every night deliver it to the thirsty and dusty road all about town.

There were no bee-keepers here to enliven our evenings, and with whom to trade jokes. We longed again for Bro. Pryal's camp-fire and Bro. Jones's enthusiasm. We knew, too, that they would enjoy the numerous mosquitoes just as we did. We realized the full beauties of cool foggy nights, for the result was fewer mosquitoes in Oakland, and a double portion in Contra Costa Co.

When the days were fulfilled for us to move along we left Walnut Creek in peace, and next surprised the town of Black Diamond. This queer little town is located on the Suisun Bay, at the point where the San Joaquin and Sacramento Rivers mingle their chocolate-colored waters. We expected to cross the bay immediately; but the town was so inviting we resolved to stop a few days. The streets were not as inviting as they are in some towns in which we have been; for numerous pigs, goats, dogs, and urchins ran at large, and preyed upon the unsuspecting camper. Black Diamond, as the name suggests, derives its name from coal-mines in the hills beyond; but the mines have been paralyzed by a ten-years' litigation. Salmon-fishing, however, is a flourishing industry, and several score of Italians reside here, and daily mend their nets, and nightly go forth to swoop in the fish, which they do by the boatload. Canneries dot the shores of the bay, and the business of putting salmon in cans is nearly as honorable as the production of honey. The Dagos, however, even if they did come from the land of our gentle Italian bees, have not

that sweet disposition so characteristic of the American bee-keeper. The Dago wives are sharp-tongued, meddlesome, and saucy. Their pigs, their goats, their urchins, and mosquitoes, were ditto. Saturday night the fishermen all came in for a grand pow-wow, more than less; wine was guzzled, and Italian language was slung through the air in volleys, salvos, and broadsides. We know, for a whole brigade of Dagos hung to the fence near our tent, and fired words at each other until one volley knocked a fellow over our tent-rope. Well, now, wasn't there music! Our lantern came rattling from its hook; Wilder yelled, and I did. The meeting outside was broken up in confusion, and the participants scattered to the four winds of Black Diamond. One of the



DAGO FISHERMEN AT BLACK DIAMOND.

Dagos was, however, polite enough to hug himself into a comfortable feeling. He came back and apologized. He explained a fact that we already knew—that the rest were all drunk. Between Dagos and mosquitoes, we slept but little that Saturday night.

Sunday I found peace and quiet in the little Congregational church. A young and earnest pastor preached a helpful sermon; but his audience was small, and the cause languished. On the public square, in sight of our camp, however, that afternoon times were very lively. There was a baseball game, and a hundred and fifty people in attendance.

Contra Costa Co. can not be classed as a honey-producing locality. About the only bees we find are in nondescript hives, and few in number. Mount Diablo (devil) in the eastern portion of the county should bear upon its sides a rich honey-flora; but from its name, or some other cause, Mount Diablo is not worth much if any thing, in a practical way. There are, no doubt, good locations along the San Joaquin River which could be made profitable with fruit-raising. That these places may soon be occupied by some happy bachelor is the wish of the Rambler.

T SUPERS.

WHY BETTER THAN SECTION-HOLDERS OR WIDE FRAMES; THE PROPER WAY TO MAKE A T TIN.

By A. B. Anthony.

I have produced comb honey in several styles of surplus-cases; and if I could have the T tins made as I like them I should like the T super best. Two-tier wide frames are away behind, because the valuable feature of tiering up is lost. Single-tier wide frames are good, but they can be rigged for only one width of sections, and then if made for separators they can not well be used without. Pattern slats, or bottom-bars, are a slight disadvantage because they place the sections that much further away from the brood-chamber. Could they be above the sections their clean tops would be valuable. As for the bottoms, no one hardly ever sees them.

T tins as I use them are fastened permanently to the crates. Simplicity should be the rule with all fixtures a bee-keeper has to deal with. Section-frames make extra pieces: separators, that many many more. Some think that shifting section-frames will pay: I think not. I used to do that too, but don't any more. A super should be suitable for sections open on all four sides.

We, the majority of bee-keepers, I believe, have always been wrong in the use of closed-end sections and open-end brood-frames, where we should have had open-end sections and closed-end frames.

I think, also, that those of us who use separators, and get ordinary prices for our honey, do so at a loss. One great trouble is, that we use sections that are too wide. The T tin that I think would be more suitable would be like the diagram above. The worst trouble with the old T tin is, that the rounding at the point 1 took up so much room as to separate the sections. The T form is a strong one. By using thin tin, and bending as I suggest, it would leave hardly a visible space between sections when compressed. Also, the points 2 2 would not form cutting edges for hands and fingers, and would never become bent out of shape as much as the old kind do.

I hope, Mr. Root, I am right in the above, and that you can see it so. Of course, a new machine would have to be gotten up to bend this form. If some of your help could turn out one to make these tins I should be pleased to have it so; and if they should fail, and you really felt that you wanted one, perhaps I could try for you.

Coleta, Ill., Dec. 17.

[So few, comparatively, use T tins now that it is a question whether it would pay us to build a new machine to make the tins as you recommend, providing we admit that they are better when so made. Of course, I see that it might be an advantage to have the point 1 as thin as

possible; but there is no reason why it can not be just as thin when constructed the usual way. On the other hand, are we sure we want them thin or flat at the upright? If we could reduce it to nothing, it would be desirable. As we can't, is a thickness of $\frac{1}{32}$ any worse than $\frac{1}{64}$? and is it not true that separator stuff will close up a space of the former on top of the sections better than in the latter? How is this, Dr. Miller?—ED.]

TIERING UP FOR COMB HONEY.

SHALL A SUPER OF EMPTY SECTIONS BE PUT UNDER OR OVER ONE WITH SECTIONS PARTLY FILLED?

By John Handel.

Editor Gleanings:—At last Dr. Miller knows (see *Stray Straws*, p. 8), where he says: "The abuse of a good thing is no argument against its proper use. Like John Handel, p. 944, I've coaxed bees up into the eighth" (I said sixth) "story, and had all unfinished sections; but, all the same, when I'm pretty sure bees will fill a second super. I put the second one under. If doubtful about both being filled, I put the empty one over."

Now, why does Dr. M. "allee samee" waste his strength lifting heavy supers off the hive and on again? We will take "don't know" for an answer, doctor, but give us a reason if possible. I know the practice is backed up by age, and numerous followers, but that is no evidence of truth. We should prove all things and hold fast that which is good. I have proven (to my satisfaction at least) that bees will commence work in the second super as readily if put on top as under the first. I gave the readers of *GLEANINGS* the benefit (if any) of my experimental labors. Now let us see if they are backed up by reason.

It is evident that the heat escaping from the brood-chamber will accumulate in the top of the hive, and that the wax-workers require this heat most; and, again, that most wax work is wanted in the empty super. Therefore if Dr. M. has as good reasons for creating that unnatural vacuum between the surplus and brood, let him trot them out. I use starters only in the sections, and like to put a few drawn combs (extending well down to the bottom) in the center of the super. It seems to induce the bees to go upstairs sooner; but such ladders don't appear to be necessary for any but the first story, or after they have acquired the habit of going up.

I am experimenting for my own benefit; therefore when I get something good, and offer it to the public, they should make allowance for the difference in the management, location, etc., and not expect to reap large benefits without testing the plan for themselves. For example, in this case of tiering up, most if not all producers of comb honey have a horizontal bee-space between every super. I have gradually discarded until that between surplus and

brood-frames is all that I can tolerate. Those horizontal loafing-halls undoubtedly hinder, and may be the sole cause of their halting between two opinions until necessity or the bee-keeper (by putting the partly filled super on top) compels the bees to reach up overhead and draw themselves through those imported spaces.

There, now, I've given Dr. Miller another chance to say, "All the same, I want a bee-space between the supers," and probably a majority of bee-keepers will always tolerate the nuisance because of some advantages, and also trouble of making the change in the surplus-arrangements. But the specialist, who manipulates not for pleasure, but for the money there is in it, will shut down on those promenade-halls, and keep his bees inside of the sections, where they will be useful, instead of scrubbing and daubing the top of every section. If those who do not enjoy lifting supers off and on again, and those ready to crawl out of that horizontal rut are of sufficient number to warrant space for a description in GLEANINGS, I will explain how they can test the principle, with but little expense or labor.

Savanna, Ill.

[Dr. Miller replies:]

WHY THE EMPTY SUPER SHOULD BE PUT UNDER; THE PHILOSOPHY OF HEAT RISING, ETC.

In the first place, friend Handel, I don't lift *heavy* supers off the hive and on again. They're only about half full, and weigh somewhere in the neighborhood of 15 pounds. But I suspect there isn't as much difference in the amount of strength laid out as you suppose, between your way and mine. Let us compare.

Suppose on the same date you and I have each a hive on which there is a super half filled, ready for an empty super to be added. I go to mine, lift off the half-filled super, put on the empty one, then lift back the half-filled super. You simply put the empty super on top, without touching the half-filled one. Now we'll go again when the first super is ready to take off, the second one being about half full. You lift off the half-filled super, take off the full one, then put back the half-filled one. I take off the full one without touching the half-filled one. So you see the labor exactly balances. You do the extra lifting one time, and I do it the other. That's on the supposition that we know, without looking, just when the full one is ready to take off. As a matter of actual fact, we don't know when the full one is ready to take off, and a good many times look at it only to find it not yet ready. At such times you have to lift off the partly filled one and then lift it back, whereas I have no lifting to do. That makes my way appear to have less lifting than yours, doesn't it?

So my answer to your question, why I waste my strength "lifting heavy supers off the hive

and on again," is because I don't know any other way that takes so little lifting.

You have proven to your satisfaction that bees commence work just as readily in the second super if it be placed on top as if placed under. Others have proved equally to their satisfaction that bees will commence always as readily, and generally more readily, in a super placed under. So the only thing is for one to practice one way and the other to practice the other way. Only the beginner, until he has had experience of his own, will do well to follow the practice that has been found best by almost all, for, as you say, almost all raise the partly finished super and put the empty one under.

You want me to trot out my reasons for creating that unnatural vacuum between the surplus and the brood, if I have any "as good" as yours. All right; I'll produce the best trotting stock I have. But, first, suppose we take a look at the teeth of your trotters. "The heat escaping from the brood-chamber will accumulate in the top of the hive," and so the wax-workers, which need heat, ought to be there. Granted that heat rises, does it accumulate? Right by where I am now sitting is a small register which lets the heat up from a fire below. When the register is open, allowing the hot air to rise through it, the metal becomes so hot it burns my fingers. Now close the register and let the heat "accumulate." Does the metal get red-hot? On the contrary, it becomes quite cool to the touch. Don't take things for granted, but "prove all things," and then you'll not think the second super is warmer than the one under it. Heat rises from a stove, and it's warmer at the ceiling than down at the floor; but hold your hand directly over the stove at the ceiling, then lower it, and you'll find the heat becoming greater the nearer you approach its source. So, the nearer the brood-nest (the source of the heat) the warmer you will find it. All the heat that's in that upper super must come up through the under one; or, to put it another way, the upper super gets its heat from the one below it, and it is not likely to be warmer than the one from which it gets its heat.

Now as to that "vacuum" business. My reason "for creating that unnatural vacuum" is that bees, like Nature, "abhor a vacuum," *provided* the vacuum be between two parts of their work. So when the vacuum is "created" they hustle to get it filled up. But how much less vacuum do you have than I? When an empty super is put on, isn't there just the same vacuum in it whether it be over or under the previous one?—only create your vacuum outside of the space occupied by the bees, and they'll not go up for the sake of filling the vacuum, but simply and solely because they are crowded for room. With your plan the bees leave home and friends to commence in a new spot at the top of an empty super; whereas

with my plan they commence work right under and close to the bees at work above them.

And just that difference between commencing promptly in the second super, or waiting to be crowded to it, may make the difference between filling up the second super and swarming. The thing desired is to get them at work promptly on as large a surface as they will profitably occupy, and yet not have them commence work on more than they will finish up in good shape. If they commence work on five supers, and have material enough to fill only three, we may expect a large proportion of unfinished sections, if, indeed, any of them are finished. But equally we'll have unfinished sections with only one super on, provided there is not honey enough to fill it. The bee-keeper must use judgment, in an ordinary season getting the bees to occupy a goodly number of sections early in the harvest, and crowding as much as possible toward the last.

That bee-space between supers, to which you object, is in some respects objectionable, but nearly every one submits to it rather than submit to something worse. At different times it has been discarded, only to be taken up again after trying some other way. A quarter-inch space between two supers is a bad thing; but no space at all is still worse, I think, in the judgment of those who have thoroughly tried both ways. But if you like to have one super jammed down on another, to be glued together by the bees, with the chance of mashing bees between the two, there's no law in Illinois to prevent it.

Marengo, Ill.

HONEY AS A DIET.

WHY IT IS NOT EATEN MORE; HOW TO DEVELOP THE HOME MARKET; IS GRANULATED SUGAR ADULTERATED?

By C. Davenport.

I was interested in reading your article, "Honey as a Diet," page 92; but I disagree with you on some things. First, you say we have a good deal of prejudice or distaste for honey, real or fancied, to overcome. I have sold a good deal of honey, and it has been seldom that I found any prejudice or distaste against it; and when I have, generally it was caused on account of their having had some poor or inferior honey before. A good many bee-keepers, instead of doing any thing to increase the sale of honey, are doing more to injure it. These are mostly the ones who do not take a bee-paper, and you can not get them to subscribe for one, because they know all about the business. With them, any thing gathered by the bees is honey, and is sold for what they can get; and if they can't sell it all in the fall, most of them will put it in the cellar, where it often becomes sour, and even

moldy. It is then put on the market in the spring; and the consumer who buys a few pounds of this is not very anxious for any more. But with a very few more seasons such as we have had for the last three or four years, this class of bee-keepers will be pretty well done away with around here, and I think in many other localities as well.

Again, you say that many persons do not like honey. Of course, there are some who do not; but in all of my experience I have found but very few who did like good honey. I have found quite a number of persons who liked it, but could not eat it, as it did not agree with them. In regard to the family you have mentioned, who are able to have most of the luxuries on their table that can be bought, but seldom use honey, I wish there were a good many such families around here. There used to be a good many such here, but most of them are now my best customers. Let me describe one case.

A few years ago I went into the store of a prominent merchant in a neighboring town, and asked him if he used honey. He said he did not. They used to sell it in the store, but it was always dripping and daubing every thing up, and he did not want any thing more to do with it. He did not like it himself, and none of his family cared much about it. I told him I should like to have him try some of my honey. He asked me how I sold it. When I told him 17 cents a section that would weigh nearly a pound, he said he could buy all the honey he wanted, for a shilling a pound. I then asked him if he bought butter, and what he paid a pound for it. He said butter was worth from 10 to 20 cents per pound, according to what it was.

"Well, Mr. W.," said I, "there is as much or more difference in honey than there is in butter. Now, I am going to leave you a case of honey; you try one of the sections, and if you do not like it, it will not cost you any thing. I will be around again in two or three weeks, and will take away what you have not used or do not want."

This was white-clover honey, and it was very nice. It was packed in cases that held 24 sections. When I saw Mr. W. again he asked me if I had any more honey like that I had left before. On my replying in the affirmative he said he would like two more cases just like the first one. He has bought three cases of me each year since. He has quite a large family, and is well able to pay for what they like.

Of course, some years we do not get much clover honey, and some seasons we get none at all; but there are other kinds that are good, such as basswood, goldenrod, aster, etc.; and I find many people who prefer some of these kinds to clover honey; and if one works up a large home trade, and secures 100 or more regular customers, he can dispose of a good deal of

honey, and realize much more from it than by shipping it to large city markets; and in my opinion there is no better way to increase the use of honey than for each of us to thoroughly develop our home market. It may surprise you when I tell you that I have some regular customers, private families, who buy over 100 lbs. each year; but I have a number of such, and expect to keep them in spite of the fact that sugar and syrups are cheap.

ADULTERATIONS IN SUGAR.

The truth of the matter is, molasses and syrups of all kinds, at least such as we get here, are adulterated so that they are not fit to use, and most of the people around here have found it out. Here we can also buy a large pailful of jelly for a few cents. I do not think such things injure the sale of honey much if any; for after one has eaten such stuff a short time he prefers to buy honey, even if it does cost more. Most if not quite all kinds of sugar are adulterated. Almost every one seems to think that granulated sugar is pure, and that granulated sugar is always alike. As you undoubtedly know, there are various kinds or brands of granulated sugar; and while I have no doubt that they are all adulterated, I know some kinds are more so than others.

Now, I do not think that I have ever seen any honey on the table at a hotel; but I do not think this is because it would not be eaten if it were there. Last fall I took the train one day and went to a near town where I sold some honey by sample. I sold one 24-lb. case to a hotel-keeper; and when I delivered it I went into the office with it, where the proprietor and a number of his boarders were. I started to tell him I had brought the honey he had ordered; but he did not let me finish. He hurried me right through into a private room with it. I do not think he wanted his boarders to know that he had bought any honey. Very likely this was not put on the public table. But if it was, I have no doubt it was eaten in preference to molasses or syrup.

Southern, Minn.

[The article on page 92, calling forth this, was not written by me; but as no name of any kind was attached to it, Mr. Davenport very properly thought it was written by one of the editors. The name, a *nom de plume*, was left off by oversight. It should have been credited to "Novice."

This matter of developing a home market is a good one; and our correspondent's scheme, while by no means a new one, of leaving a fancy article to sell on its merits, is most excellent.

As to adulterations in sugar: We have been taught for years that granulated sugar could not be successfully counterfeited, and that, therefore, it was always pure. From time to time, reports from the Chief Chemist, at Washington, showing an analysis of the foods commonly adulterated, have come into my hands; but among the long lists therein I do not remember to have seen granulated sugar. I think our correspondent is mistaken in thinking it is ever adulterated. The brown sugars

may be and probably are adulterated more or less. I wish some expert on sugars would enlighten us on these points. See Editorial.—Ed.]

PROFITS IN THE GROWING OF ALSIKE.

HOW 30 ACRES YIELDED OVER \$1000.

By Frank Coverdale.

Mr. Editor:—It appears to me that more should be known about the cultivation and growing of alsike clover for profit. My eight years' experience with it has most decidedly prompted me to raise more each coming year.

I first began sowing it with red clover and with timothy, and afterward by itself, which has proven more profitable than any grass or grain crop on the farm. Perhaps some one might say, "How do you know?" I answer, "Because I have kept an account, and know whereof I speak."

One year I cut and thrashed 8 acres. It yielded 4 bushels per acre, and it sold for \$10.00 per bushel, and the net value was close to \$40.00 an acre for the ground on which it grew. To be sure, clover seed was high that year.

Now I wish to tell the readers of GLEANINGS what the income of 30 acres of alsike will do for me this season. I cut it when the seed was ripe, stacked it up nicely, and green as tea leaves; hulled it, and got 90 bushels of nice seed. It yielded 4 stacks of good hay, or about 40 tons, this very dry season. It is all fed to the cattle at this date; 72 of 1080 steers lived from the beginning of winter with nothing else in the way of hay up till about Feb. 1—nearly half the winter. With the above was fed each day 8 bushels of corn, and the steers look fat and plump; in fact, I feel really enthusiastic over the matter; and a better aftermath I never saw grow.

Now let us count the profit: 90 bushels of seed, we will say, will net at least \$540.00; 40 tons of good hay, \$240.00, or a total of \$780.00, saying nothing of the after-growth—\$26.00 per acre at least—a far better showing than the average cornfield, even when corn is selling at 40 to 50 cts. per bushel. The clover has left the ground in the best possible shape to grow corn or any other cereal that grows here.

Now, kind friends, I have told you how it has profited as a stock-raiser; but let me tell you that, had it not been for the alsike bloom this last season I could not have sold \$250.00 worth of honey. So it will be proper to add the above profit from honey to the proceeds of alsike, which would count up to \$1030. Can another do likewise? I would most assuredly say yes; but, let me add, try all new things on a limited scale, and hold fast to that which is good.

Delmar, Iowa, Feb. 9.

[Farmers are complaining of the low prices of the ordinary produce. Let some of them

turn their attention to alsike. It is hardly probable that all will do as well as for friend Coverdale; but the experiment, at least on a limited scale, will be worth the trial.—Ed.]

HOW I MET A. I. ROOT IN THE PINE WOODS OF FLORIDA.

"WE MET BY CHANCE," BUT NOT "THE USUAL WAY."

By Thaddeus Smith.

I first became acquainted with the name and writings of A. I. Root some 25 years ago, when he was a correspondent of the old *American Bee Journal*, then published in Washington, D. C., and wrote over the *nom de plume* of "Novice." This was before GLEANINGS was probably ever thought of, and before A. I. R. had any idea of going into the manufacturing of bee-keepers' supplies. Being very much interested in Novice's letters I found out his true name and address, and had a short correspondence with him. When the publication of GLEANINGS commenced I became one of the first subscribers, and an occasional contributor; and, having read GLEANINGS ever since, and being personally interested in the subjects its editor treated—bee-keeping, gardening, morality—it was but natural that I should become personally interested in its editor and his work and his family; and yet in all these years we had never met face to face. It has long been my desire to visit the Home of the Honey-bee, that I might become personally acquainted with the Roots and their associates, and see their interesting establishment. It is not very far from my home on Pelee Island, in Lake Erie, to Medina; but something has always been in the way of my getting started there.

In November last I left my island home to spend the winter in Kentucky and Florida. I saw in GLEANINGS that A. I. R. was also going to Florida. He was to start earlier than I intended, and he intimated that he would go on to Cuba, so I had no expectations of meeting him. I started for Florida Jan. 22d; but before I started I copied from GLEANINGS the names and addresses of several Florida correspondents. I had no special business with these bee-keepers; but I thought that, if I should go near them, I would call, as I generally find them congenial companions. Among these names was that of Charles Norman, of St. Petersburg.

I spent three weeks on the east coast, from Jacksonville to Palm Beach on Lake Worth. I then made my way across the State to Tampa, my objective point being Tarpon Springs, where I had an engagement to meet some Kentucky friends. To get from Tampa to Tarpon Springs, it was necessary to cross the bay to St. Petersburg to get to the railroad, and then I had six hours to wait for the train. To pass

the time, and see if there was any thing there of interest, I took a walk with my daughter, who is traveling with me; and as we passed the postoffice I said to her that I knew of a bee-man living there, and I would inquire for him. "Yes, I know Mr. Charles Norman," the young man said. "He lives ten miles out in the country."

Seeing a livery-stable on the opposite side of the street I crossed over and asked about Mr. Norman. I was informed that they had just sent a man out to Mr. Norman's. It was only seven miles, and he would take me out for two dollars. I did not think that I wanted to see Mr. Norman quite that bad, but felt curious to know who the man was that had just gone to Mr. Norman's, and concluded it must be some bee-man with whose name I might be familiar, and I went back to the hotel to consult the register. To my surprise and delight I there found the names "A. I. Root and daughter." The clerk said the gentleman had gone out, but the lady was in the house. I told my daughter, and sent her upstairs to hunt up Miss Root, and she brought Miss Constance down, and we very soon became acquainted. Didn't I know her as "Blue Eyes" when she was a laughing, romping child? know her as a college student? know her as the musical genius who handled the violin and the bow? know her as the business young lady, the stenographer and "pretty typewriter"? Of course, I did; but we had never met before, and there she now stood, looking just as I expected to see her—blue eyes still. She said it was doubtful about her father coming back that night. My only chance, then, of seeing A. I. R. was to follow him up, and I hurried back to the stable and got a rig as soon as possible, and struck out upon a "trail" (they have no roads in Florida), through an uninhabited pine forest, for Norman's. When we had gone some six or seven miles we met the other buggy returning. I had seen some pictures of A. I. R., and had so often in fancy pictured him in my mind that I flattered myself I should know him wherever we might meet. But the little thin-visaged man, with short gray (nearly white) beard, with a brimless *fur cap* on (down here in Florida), and his coat buttoned up tight around his throat—this man whom I was meeting, sitting in a buggy by the side of a broad-faced colored boy—did he look any thing like the A. I. R. whom I expected to meet? Not much. But as my driver said that he was the man he had sent out to Norman's, it could be no one else. I jumped out of my buggy, and stepped forward to greet him. I asked if he did not know me. I knew, of course, that he did not, for we had never met before. When I handed him my card, the name seemed familiar to him, and I invited his colored driver to get out and give me his place. As we drove through the lonely pine woods back to St. Petersburg, you may be sure I had a visit with

him that I greatly enjoyed, and shall never forget.

But our ways diverged, and the time for separation soon arrived. Miss Constance was not going with her father, but would go on the same train with me to Tarpon Springs, where I had expected to meet her and have the pleasure of getting better acquainted with her, and of introducing her to a number of my friends; but when I went to look her up next morning I found that she had left the place.

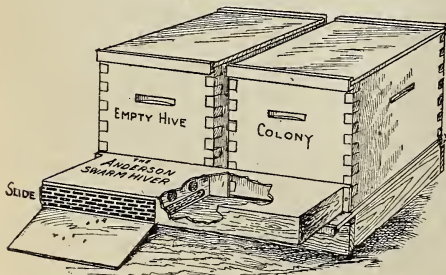


THE ANDERSON SWARM-HIVER.

By Louis Anderson.

In the spring, or before the swarming season, prepare a hive-stand large enough to hold two Dovetailed hives placed side by side, and two inches apart. Place the colony of bees upon the left end of the stand, and an empty hive on the right (the bee-keeper is supposed to be standing in front of and facing the hive.)

As the swarming season approaches (say from the first to the tenth of May), reverse the hives, placing the empty hive on the left and the colony on the right, taking care to have the front of the hives on a line with each other, and about two inches apart: then set the swarm-hiver upon the alighting-boards and fasten with a screw through the blocks on each end of the hiver, and screw up tight. If the hives stand upon a line, there will now be no



outlet for the bees except through the hiver. Now close the entrance to the empty hive by placing a wood strip large enough for the purpose against the entrance upon the inside of the hive, to keep the bees out until they have become accustomed to the hiver, which will be after the first day. As soon as they have become accustomed to the hiver, remove the strip and put in frames of empty comb or foundation, and the hive is ready for swarms. A small alighting-board should be placed from the entrance to the ground, for the bees to alight upon. If the hives are placed well to

the front of the hive-stand when first placed, and well to the rear when reversed, the entrance to the hiver will be very near where the entrance to the colony was before the hives were changed.

OPERATION OF THE SWARM-HIVER.

When the swarm issues, the bees and queens pass out of the chamber in the hiver in front of the colony through the perforated zinc and the wire-cloth cones, into the chamber in front of the empty hive, and the queen is there trapped. The swarm, upon discovering the absence of the queen, returns to the hive, and, finding the queen at the entrance of the hiver, which, being directly in front of and communicating with the empty hive, the bees at once enter the empty hive with the queen, and commence work. The hiver may now be removed by taking out the two screws, and all queen-cells except one cut out of the parent hive.

The swarm may be strengthened, if desired, by removing the hiver in the middle of the day, when the bees are flying freely; the entrance to the hiver being in front of the swarm-hive after the hiver is removed, the field-bees will return to the swarm-hive. If the swarm is considered to be strong enough, the hiver should be removed early in the morning, before the bees are flying.

WHAT IS CLAIMED FOR THE ANDERSON SWARM-HIVER.

1. It will hive large full swarms.
2. To see if the bees have swarmed, it is only necessary to raise the cover to the empty (or swarm) hive.
3. Either of the hives may be examined without disturbing the other.
4. If a second swarm issues before the hiver is removed, it will be hived with the first swarm; in such case the old (or laying) queen will be accepted by both swarms, and the young queen balled and destroyed.
5. If the bees do not swarm, the colony gathers honey just as well as without the hiver. During the season of 1892 the colony that made the most comb honey in my apiary of 40 colonies had a hiver attached, but did not swarm.
6. If drones clog the entrance to the hiver, the perforated zinc slide may be withdrawn, the drones liberated, and the slide returned; the drones may then be destroyed, in the evening, at the entrance of the hiver. Or make a small box, three inches high, the size of the entrance to the hiver, but without top or bottom. For a top, nail on a strip of perforated zinc; and in place of a bottom, make a tin slide to work the same as the perforated zinc slide in the hiver. To clear the hiver of drones, withdraw the tin slide from the box and place the opening in front of the entrance to the hiver. Now remove the slide in the hiver, and the drones will enter the box. As soon as the drones are in the box, return the tin slide and remove the box, and replace the zinc slide in

the hiver. The drones are now all prisoners in the box. As soon as the worker bees that have been caught with the drones have escaped through the perforated zinc top, shake the box pretty hard for a few moments, which will stun the drones, then withdraw the tin slide and empty the box on the ground, where the drones may be killed by tramping them with the foot.

THE ANDERSON SWARM-HIVER AS USED IN THE PRODUCTION OF COMB HONEY.

For the production of comb honey I have found no better method than the following:

After putting on the swarm-hiver I place four frames filled with sheets of foundation in the empty hive. The fourth or fifth day after the bees have swarmed, the swarm will have settled down to work, and will have the foundation in the four frames well drawn out. I then in the middle of the day, while the bees are flying freely, take four frames of hatching brood, with the adhering bees, out of the parent hive, removing all queen-cells if there are any on them, and place two of the frames on each side of the four frames of foundation in the swarm hive. I then take the half-story with the sections and bees off the parent hive and place it on the swarm-hive; then remove the hiver, and move the parent hive with the four remaining frames of brood to a new location.

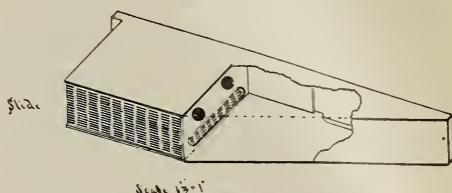
All the field-bees from the parent hive will now return to the swarm-hive, which, with the four frames of hatching brood taken from the parent hive, will make the swarm very strong; and the swarming fever having been satisfied, work will go right along in the sections. When the next colony swarms I proceed in the same manner and place the parent hive, when removed, by the side of the parent colony that cast the first swarm. As soon as the first parent hive has a laying queen I remove the queen from the other hive, if they have one, and then double the two together by placing the frames from each hive alternately in the same hive. I then put on a super full of sections, and if honey is coming in freely the bees will enter the sections at once. By this method the increase is kept down to one colony for every two swarms. If increase of colonies is desired, instead of doubling the parent hives put in each parent hive four frames of comb or foundation, and allow them to build up.

By the above method there will be no second swarms, as the removal of the four frames of brood and bees, and the loss of the field-bees, so weakens the parent hive that, as soon as the first queen hatches, the remaining queen-cells are destroyed.

[After friend Anderson had sent the foregoing, he later sent the following, with another drawing showing the arrangement somewhat simplified. We have had it also engraved.—Ed.]

Within the past two days I have thought of

a slight improvement in it, as will appear in the drawing which I inclose herewith. You will notice I have cut off the corner of the chamber in front of the colony, and beveled the hive, thus doing away with a useless vacant



space—making the hive less bulky, and considerably decreasing the amount of lumber required to make it. When made as shown in the drawing, a $\frac{1}{4}$ -inch board 10 in. longer than the top board of the hive sent you, cut diagonally, will make both top and bottom of the hive, and no end board is required in the beveled end, as the front board nails up to the block in the end of the hive.

Bloombsbury, N. J.

THE DANZENBAKER HIVE AND SECTION.

By F. Danzenbaker.

Forty years ago I managed bees in box hives, and then progressed to the Quinby and American hives, with large and deep brood-chambers and combs, liable to stretch, sag, and bulge, when heavy with honey. The care of keeping the hives exactly level to secure nice straight combs true in the frames led me then to desire a shallow comb-frame, more than 25 years ago, which I laid aside when the Simplicity hive came in vogue, that I might be in fashion with those using the standard hive and $4\frac{1}{4} \times 4\frac{1}{4}$ section, the production of comb honey being my specialty; and during that time I have been a close observer of others, testing what I thought desirable improvements, including the open and closed end frames and the Hoffman deep top-bars, etc. However, I am chiefly indebted to the champion comb-honey producer, Capt. J. E. Hetherington, of Cherry Valley, N. Y. (who has raised 40 tons of comb honey in a year), from whom I learned the superiority of the oblong deep honey-sections as used by him and others in New York and the East. Twenty-five per cent more of them will stand on a given hive surface than the standard $4\frac{1}{4} \times 4\frac{1}{4}$ sections; and this form conveys a better impression of full weights. Having space for a deeper cluster, the bees enter them more readily; and, filling them out better at the sides, they are safer in transportation; more attractive in appearance, they sell for two cents each more in market. Thirty-two of these deep sections, in a case, require no more hive surface than 24 $4\frac{1}{4} \times 4\frac{1}{4}$ sections on the eight-frame Dovetailed

or any other hive. They are scored out *at the corners*, providing side openings for free passage of air and bees between the tiers of sections, also saving the irksome labor of scraping propolis from the corners of sections; said corner being cut away, the bees do not daub or glue the openings which they can pass through. The sections are nicely filled at the corners, and are ready to set right into the shipping-cases, as taken from the supers.

The Root style of section-holder (put together by dovetailing) is made to hold four of these sections, there being eight holders for each case, supported within the metal hangers and case, provided with wood separators nailed to them to make the sections of uniform size and weight.

The entire case of sections and holders is covered air-tight with a layer of paraffine paper, which the bees do not cut away if covered over with other paper or cloth, and held down close and smooth by thin boards beneath the outer cover. This is of the utmost importance, as bees can not work to advantage until the top of their hive is *air-tight* to retain the warmth of the colony, provided there is abundant ventilation at the entrance of the hive, which may be controlled to suit the seasons and conditions of the colony, to restrain the swarming impulse. When extra stories are used, and more ventilation is needed, it can be given by reversing the bottom and shifting the first or second story forward, thus giving full and direct ventilation at front and rear if desired, which will cause the bees to store their honey at the top of the hive, instinctively to avoid danger from robbers.

The hive-bottom is made to give a deep space and opening under the frames by reversing it when desired to admit more light and air to force the bees to store their surplus at the top of the hive. The bodies and supers are all alike, square edged, to fit tightly together for tiering up, consisting of but two pieces, ends and sides dovetailed to go together the same as four-piece sections.

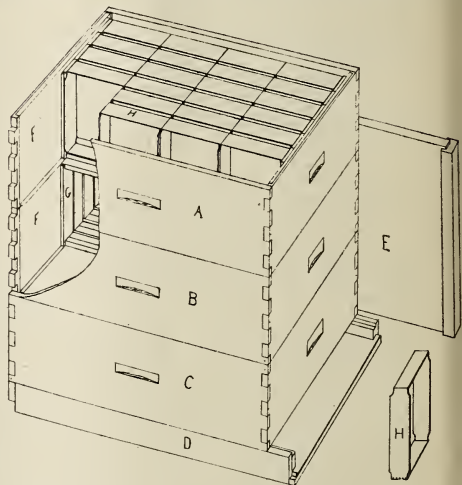
The brood-frames are made in the same way; but the ends and top and bottom bars being alike there are but two kinds of pieces used in them. The section-holders are also made of two pieces, so in each of the separate parts of the hive they duplicate each other, to have the fewest separate pieces possible; and as all are made for me by the A. I. Root Co. with the latest improved all-iron machinery, the work is as nearly perfect as possible to be, and is very easily put together.

The hive proper consists of two stories used as a brood-chamber, and one story for a super; extra supers can be ordered to use if two tiers are needed. Two stories are intended to be used in wintering, as well as breeding up in spring, as the full bee-space is at the top of each case, independent of the others. The lower hive is intended to be placed at the top in

putting on a super to bring the brood directly beneath the sections, which stimulates the bees to storing honey directly above it; by alternating the bodies at proper intervals, the uncapped honey will be carried from the lower one to give room for the queen; and the two stories giving ample room for a brood-chamber, no queen-excluder is needed where separators are used between sections filled with worked foundation, as the queen will not leave a large brood-nest for single sections, except to raise drones when not allowed drone comb in the brood.

METAL HANGER.

The brood-frames for sections, and the brood-frames, are supported in the case on a removable sheet metal provided with turned edges or flanges on alternate sides, to hang upon the top edges of the cases, with the end-bars of brood-frames or section-bars resting upon its lower edge, this unshrinkable metal having such



bee-space that *will not* be contracted by shrinkage above the brood-frame and sections as may be desired, and determined by the width of the sheet metal and corresponding depth of the cases. These metal supports are adapted to either deep or shallow hives, using close-fitting end-barred brood-frames. This arrangement gives increased capacity and facility of manipulation, as these removable supports *can not* be glued fast to the hive, and are fully covered by the end-bars of the frames, which they support and protect from touching the end of the cases, so that the bees *can not* glue the frames fast to these supports, *nor to the sides* of the hive, and they are easily removed with the brood-frames or sections by reversing the case and lifting it off, or they may be pressed down over a follower the same as a "T super," leaving the sections or frames free for removal or inspection. Paper or other elastic material may be placed between these supports and the cases to form a cushion giving flexibility, if de-

sired, to facilitate the nlling and removal of frames or sections.

Washington, D. C.



FLORIDA MOSS AND HONEY-PLANTS.

By Mrs. L. Harrison.

I read with much pleasure A. I. Root's notes of travel in Florida. For four seasons it has been my winter home. This winter is very materially different from previous ones that I've known, for frost has robbed the orange and lemon trees of their shiny green leaves, and kept the roses from blooming. Whenever I pass under the magnificent live-oaks, hung with nature's drapery, I feel like raising my hands in adoration to the Giver of all good, with an invocation that this great work of his, for centuries, may not be rudely destroyed. "The groves were God's first temples."

The botanics class Spanish moss as an air-plant, and I fail to find any roots that would indicate that it is a parasite; but it is said in time to kill trees. To-day I passed through a grove of live-oaks, and I noticed several great trees, heavily laden with this moss, that were entirely dead. If it is a parasite, it draws life from both living and dead trees—from the sap of the living and from the decaying wood of the dead. I think it is a mistake, that it will grow hung on a wire. Many observing persons think that its presence indicates malaria, and, by a wise provision of nature, absorbs it in some way. It evidently thrives best where the fogs are the thickest and most frequent, holding moisture in its meshes. It does not grow naturally on our own grounds; but when I put it upon the limbs of scrub oaks it lives, but does not thrive as it does in its native habitat. I grow it as food for my fowls, for they are very fond of it; so are cattle; and I wonder why the residents do not pull it down for them, when forage is so scarce that they will eat daggers. I've not been able to learn whether bees work upon this moss while it is in bloom.

If this moss is gathered and put into pillows and mattresses in its green state it will soon smell very offensive. The parasite must be killed by burying in the ground, or by boiling, before it can be utilized in this way, when it will make good mattresses and pillows.

The ti-ti is an excellent honey-plant, and should be spelled with a hyphen. It may be found in a Southern botany, and is known as *Cliftonia ligustrina*. It is an Indian word, and means tangle, or thicket. The name is given to the small trees; also the places where it grows are known as ti-ties. It grows only in

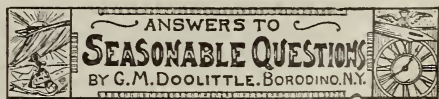
living water; and if the water is dammed up, and becomes stagnant, it will perish. The bloom is small and white, growing in racemes, and is sweet and fragrant, yielding honey that is white and of good flavor. It had commenced to bloom before the great Valentine storm of snow and sleet, which put an end to it; but it is again opening, Feb. 25. It is much used for decorations at Eastertide.

I see that you class goldenrod as blooming here in September; it may bloom then, but I've seen bouquets of it gathered in April.

You should not fail, while in Florida, to visit the largest apiaries in the State, of Alderman and Roberts, located at Wewahitchka. This is an Indian name, meaning the "lakes of the two eyes," or eye-glasses, as they are shaped like them, and are about 35 miles long and 18 miles wide—otherwise known as the Dead Lakes. They are thickly studded with dead cypress-trees. One of the most weird experiences of my life was while returning from visiting an apiary located on an island. It was in the gloaming; and the approaching darkness, as I sat in the canoe, with the tall cypress-trees bearing upon their branches a heavy drapery of moss, and only the strong arms of a trusty colored man to guide and propel the little craft through the intricacies, was a scene long to be remembered.

The trade-mark of this firm is "Orange Bloom." Their surplus honey is not gathered from this source, as that from the orange is used in rearing brood. There are many groves in this locality. The surplus honey is gathered from tupelo. There are several varieties, known as black-gum, sour-gum, and gum-trees. Bees also gather honey from moonflower, an aquatic vine. This region will support more colonies than any other I ever saw; but it has its drawback, in being very malarious.

St. Andrews Bay, Fla., Feb. 26.



WHEN TO TRANSFER BEES.

Question.—Having quite a number of colonies of bees in box hives which I wish to transfer, I should like to know when this can be done to the best advantage. Can I do it as soon as spring opens? or had I better wait till the bees are securing honey from the fields?

Answer.—The transferring of bees from box hives, or "gums," or from one style of frame hive to another, can be successfully done at any time of the year when bees can fly, if the operator understands just the needs of the case; and I always look with pride on that man or woman who has ability enough to accomplish any thing successfully which it is necessary to

do at a certain time, no matter whether said time is the most propitious or the most unpropitious. The one who can set out a row of small fruit plants, and make all live in a time of extreme drouth in midsummer, or the person who can successfully transfer a colony of bees in early spring, when robber-bees are prowling around, is to be admired; yet unless there is some urgent reason why a certain thing should be done at a certain time, it is always best to wait about doing any thing till that time when every thing is the most conducive toward a successful outcome. As I consider it, there are two seasons of the year when bees can be transferred to the best advantage, the first being during fruit-bloom, and the other 21 days after a prime swarm has issued. During the first part of fruit-bloom the scramble after new honey is such that one is not liable to be annoyed with robber-bees, and at this time there is very little honey in the combs to cut through and make a sticky mess of every thing which is used during the operation. Again, as the bees are getting their first honey they are eager for something to do inside the hive at night, hence will repair all the mutilations of comb, fasten the same in the frames, etc., much more readily than at any other time. With all the above being true, fruit-bloom brings the most auspicious time for transferring bees, but it has this drawback: As a rule, the bees have got under good headway rearing brood, and we shall find the combs half or two-thirds filled with the same, so that, in cutting them to fit our frames, much brood must be sacrificed, as well as displaced in the brood-nest, owing to our not being able to secure all in the shape in the new hive which it was in the old one. All of this has a tendency toward a loss of bees; and as all of the brood which is sacrificed at this time would become bees of the right age to do the best labor in the honey-harvest, had we left the transferring till later on, we can see that a loss must be made by doing our transferring at this time of the year, with all colonies except those which have little brood in their combs. For this reason I prefer to wait till 21 days after the prime swarm went out. At this time all of the brood will have hatched from the combs, except perhaps a few drones, and the young queen will have laid but a few days, not long enough so that there will be much but eggs in the combs, so that all we have in our way now is the honey which the combs may contain. As this comes at a time of year when the bees are securing all of the honey they want, and the weather is always warm so that no brood or bees will become chilled, we can now do our work right out in the bee-yard, this making it more convenient. Then should you desire to use the Heddon, or modern plan of transferring, by driving out the bees and hiving them in a hive filled with comb foundation, this is just the time to do it,

for the combs are free of brood, so only the one operation is needed, and the old combs can be cut out at once and placed in the solar wax-extractor, doing this work right beside the wax-extractor, so that in an hour or two you can have both the honey and wax in shape to use, thus saving time and delay which would result at any other time of the year.

HOW MUCH FOUNDATION SHOULD BE USED IN SECTIONS?

Question.—As I wish soon to prepare my sections for the coming honey-harvest, I should like to know just how much thin comb foundation it is best to put in each one. Shall I put in just a small triangular starter, or fill the section full?

Answer.—The answer to this question will depend quite largely on two things. The first and most important is, have we the necessary means to procure all the foundation which will be needed to fill our sections, without depriving ourselves or family of some of the necessities or comforts of life? If we have not, then my way would be to use triangular starters, the same having each of the three sides about two inches long, in three-fourths of the sections I was to use; and when the season opens, put in starters of white new comb, which it is always easy to find or produce during fruit-bloom in any apiary, in the remaining sections. In this way little if any difference as to the yield of honey will be seen in an ordinarily good season, especially if the sections containing the starters of comb are scattered uniformly among those having the foundation starters. The difference when so working will be that the sections will not contain all worker comb, nor present quite so fine an appearance, nor the combs be attached to the wood of the sections all around quite so well, as where the foundation in full sheets is used; still, very little difference will be made in the selling price for the lack of the full sheets of foundation.

Again, if I thought it best to hive my new swarms on frames filled with comb foundation, so that wired frames filled with worker combs would be a certain result, then I would use only starters in the sections as above. When a prime swarm issues, they go forth, as a rule, with wax already secreted in their wax-pockets, so that they may at once commence to build combs in their new home; and if the new home is already supplied with all the necessary combs this wax is wasted, or, what is often the case, worse than wasted, it being added to the foundation already in the sections, so that, instead of drawing out the side walls of the foundation, they build with their own wax the cells of the combs, thus leaving the foundation in the sections the same as it left the mill. This causes the grumbling about "fishbone" in section honey, which we often hear about. Now, where I hive swarms on full combs, or frames filled with foundation, I use only start-

ers in the sections, and find that the bees will build the combs in the sections while they are drawing out the foundation below, and thus a saving is made. But as a rule I prefer to fill the sections with foundation, that I may have handsome salable sections of honey, and use only starters of foundation in the frames below, having the starters in the frames, say from one to 1½ inches wide. By contracting the brood-chamber to six frames, the bees go to work at once in the sections, drawing out the foundation there, while at the same time they build all nice straight worker comb in the frames, which does not detract from the amount of section honey in the least, so far as I can see.



THE CROSSES OF FIVE-BANDERS.

I notice in January 1st GLEANINGS, page 23, an editorial stating that a cross between a queen of five-banded stock and a black drone, or a five-banded drone and a black queen, will, according to your experience, result in all the bees showing at least three yellow bands. Now, there must certainly be a mistake somewhere, as our experience has been to the contrary; for we have had many a fine golden five-banded queen mated to a black drone, which in every case produced from the finest five-banded bees to the blackest native, and we had also the reverse. A black queen mated to a five-banded drone produced bees as black as tar, and now and then a bee that showed three, four, and five bands. LEININGER BROS.

Ft. Jennings, O., Feb. 6.

COUNT YOUR MONEY OVER.

When I was selling my honey this fall, the last I sold came to about \$30.00. It was in Detroit, and on the street. The man took it at my weights, and we reckoned the price the same, and he paid me before the honey was taken from my wagon. He took a roll of bills from his pocket, counted them, and handed them to me. I counted them, and found \$21.00. Said he, "Let me see them. I thought there was more." He counted them over again, and said, "Yes, that is right—twenty-one," handing the roll back, which I put into my pocketbook by itself. He then paid me the rest in silver, put the honey in his wagon and went his way, while I went home congratulating myself for selling out at a good price. You can imagine my feelings, when I got home and counted my money, to find his roll of bills just \$10.00 short. It made me blue for a while, I tell you, for I could ill afford the loss; but God probably knew what it was for. It is the first time I ever lost any that way, but have since learned of quite a number

doing so. I was watching the man all the time, and counted the bills at the same time he did. He must have been very expert at his trade. The moral it taught me is, always recount your money when it has been taken from you for recounting and handed back to you.

BENJAMIN PASSAGE.

Stark, Mich., Jan., 1895.

HOW TO EXTRACT THICK HONEY.

I wonder if all honey is as hard to extract as was mine last season. I left the honey on the hive till it was well ripened. The frames weighed about 7 lbs., and the honey was so thick I could not extract all of it, as it would break the combs. What was the cause? Is all honey so hard to extract, or was it the extractor? The extractor was of my own construction.

FRANK N. BLANK.

Prairie Home, Mo., Feb. 18.

[You must have some extra fine honey, for the thicker it is, the better. How shall we get it out of the combs? First store the combs in a warm—yes, hot room for a few hours. Use a reversible extractor; extract one side of the combs partially; reverse the pockets, throw out the honey, and then return to the first side and throw it all out. The combs break because the great weight of honey on the side opposite the side extracted presses upon the bottom of the cells; but by reducing this weight by a gentle turning of the handle, greater speed may be used to get the honey all out without breaking the combs. Of course, they should be wired.—ED.]

H. R. BOARDMAN'S ARTICLE AND C. A. HATCH'S COMMENTS.

Feb. 15th GLEANINGS is at hand, and I have read Boardman's article on hives with much interest, and can say "me too" to almost every line, especially on the tiering-up part. The whole article is well written, and the ideas are good. But let me call your attention to some points in the tiering-up paragraph. 1. He says it "involves some extra labor." Good! just my idea! 2. He says, "I do not expect the queen to continue laying in both hives at the same time." "I do expect, and am not often disappointed, when the queen goes above, that she will continue to work in the upper hive until it is full of brood." Just so! what we have always said; and while this is going on you are getting empty combs or combs of honey below, by the hatching of the brood. Do you see my position on this tiering-up question? Let me try once more to explain it. Plenty of room below for the queen, so she need not go above to lay, to the neglect of the combs below. 1. Because we do not want any empty combs in the hive. 2. Because if they are empty of brood, and the workers fill them with honey, it discourages storing above. See?

But, why do you claim Bro. B. on the eight-frame side? Simply because his frames count eight? He advocates nine, however; and when you figure out the comb surface of his

nine frames, $12\frac{3}{4} \times 12\frac{3}{4}$ inside measure, you have rather more comb surface than ten L. frames with $\frac{3}{8}$ -in. top-bars. The comb surface of 9 frames, $12\frac{3}{4} \times 12\frac{3}{4}$ in., is $1463 +$ in., and the comb surface of 10 frames $8\frac{1}{2} \times 17\frac{1}{4}$ in. (L. size with $\frac{3}{8}$ top-bar), is $1455 +$ in. Is that difference enough to argue about? Really, Bro. B. differs from the ten-frames in favoring closer spacing, not in number of frames. Am I right?

Ithaca, Wis.

C. A. HATCH.



EIGHT extra pages as usual.

OUR revised booklet on Bees and Fruit is now out. See Special Notices for further particulars.

REPORTS show that bees are still wintering comparatively well, considering the extremely cold winter that we have just had. We shall be sending out our statistical blanks soon.

WE have just had a delightful visit from the Hon. Geo. E. Hilton, one of our bee-keeper legislators, just from the Michigan State Assembly at Lansing. He is chairman of the Railroad Committee, and had arranged matters so as to get away a couple of days to make us a call—a pleasure he had promised himself for years back. Mr. Hilton is one of God's noblemen, and I wish more of our legislators had the same honest heart and the same earnest desire to do good to their fellows as he has. Although the opposition at the last election made a tremendous effort to defeat him, even putting up a union ticket combining three parties, he was elected by a handsome majority for the second time.

THE BEE-ESCAPE FAD AND BEE-ESCAPE INVENTORS.

IT seems as if almost every mail was bringing in a bee-escape that some fellow has just invented. The ground has been so well gone over that none of them, so far as I know, contain any new idea other than that recently advanced by C. W. Dayton—the flood-gate principle combined with the going-toward-the-light idea. This combination, I believe, is new, though the two separate ideas are old.

Well, how about these fellows who are sending in their escapes? I have to write and tell them that their idea belongs to so and so, as described on such a page of GLEANINGS. One man wrote that he had an escape that would rid supers of bees in two hours' time. I somewhat doubted it, and the more so when I came to examine critically his escape. If I am correct, the most we can expect of any escape, on

the average, is to get the bees out of the super over night; and I am inclined to think that those who *think* they have something that is away ahead of the Porter, the Dayton, or some of the other well-known forms, that will do the work in a half or a sixth of the time, will find, upon further experimenting, their mistake. The bee-escape fad has assumed, within the last six months, or year, something of the nature of the reversing-frame fad of a few years ago. Our older readers will remember that almost every thing conceivable, in that line, was invented. Well, that condition of affairs is pretty nearly true of the escape. The old forms may be improved some, but that is about all we can expect.

HONEY IN HOTELS.

I BELIEVE it is a fact that hotels throughout the country seldom put honey on the table. The proprietors may be laboring under the impression that it is too expensive. But honey is something, a little of which will go a great way; and if only some means could be employed to induce the proprietors to place the article on the table, even if only once a week, it would add greatly to the sale of honey, and at the same time advertise it among a class of people who would use great quantities of it. If beekeepers, whenever they patronize hotels, especially when in attendance at conventions, would call for honey at the table, it would be put there. Then producers should make an effort to sell to them direct. The following is an extract from a letter, that I take pleasure in giving here:

The writer was in Grand Rapids last week, and the first time he ever found a hotel that served comb honey to the guests was the Morton House. Upon questioning he found out that they served it every Friday night; and as they gave about $\frac{1}{4}$ of a pound to each one, you see they are liberal in serving it. You might mention this fact in your paper, as it might assist some of the bee-keepers to interest other hotels in using it, thereby making a larger outlet.

S. T. FISHER.

Chicago, Ill., Mar. 7.

The proprietor of the Morton House ought to be congratulated. We feel sure that their patrons will appreciate the favor, even if comes only on Friday. Let more hotels follow the example.

GIVEN FOUNDATION MADE ON ROLLER MILLS.

WE have finally turned out a mill that duplicates almost exactly, in my estimation, the same article that comes from the Given press. Besides that, it has the advantage of the rolls in making a more regular sheet, and, I hope, a thinner base, and, in a given time, a larger quantity. Here is what Mr. R. L. Taylor says, to whom I sent some samples:

Friend R.:—Yours of a late date, as also samples of foundation made on new style of machine, is received. The foundation is very much like the Given; looks exceedingly well, and, when properly

made for sections, I believe it will prove to be a decided improvement over the old kind. Of course, the main advantage will be in its use for sections, and for that purpose the sheets of wax must be made so even and thin that, in milling, the raised cell-walls will not be pressed on top. I shall, of course, be very anxious to test it when the honey season comes.

R. L. TAYLOR.

Lapeer, Mich., Mar. 8.

I wrote to Mr. Taylor that we would send him some of the Given rolled wax in sufficient quantity for him to test, to see whether it compared favorably with that made by the press. In the mean time, doubtless, other bee-keepers would like to try it. I am glad to say that we are now in position to furnish it at the same prices as other foundation, when called for. But you must bear in mind that it does not look like ordinary *rolled* wax. The walls are very thick, and the sheets of foundation have a rather clumsy appearance as compared with the regular article that we have been selling.

SIMPLE METHODS OF DETECTING WAX ADULTERATIONS.

In speaking of detecting impurity in beeswax, the Dadants, in our last issue, refer to the water and alcohol test. It has occurred to me that some of our readers would like to know what it is. On page 596, Vol. II., of Cheshire, we find the following:

Fresh wax melts at about 144°, but the melting-point rises 2° or so by a few months' keeping. The specific gravity of wax is nearly equal to that of water, and ranges between .960 and .965, water being 1.000. When adulterated with hard fats, its specific gravity is reduced, and on this fact Mr. Hehner has suggested an exceedingly simple test. Take a piece of undoubtedly pure beeswax, and cautiously mix alcohol (methylated spirit) with water until the wax just sinks. A piece of wax so adulterated would, in the same test-fluid, rise to the surface. The test must be applied, however, with great care, as any air-bubbles in or on the piece to be tried might lead to its being condemned unjustly.

A simple method for the detection of paraffine adulteration, though not entirely reliable, is to take a small piece of the suspected wax and chew it. If it crumbles up within seven or eight minutes in the mouth, it is probably pure wax. If paraffine is mixed with it, you can chew it longer without its crumbling, but it will not crumble quite so much. To sufficiently acquaint ourselves with paraffine mixtures, we took a small quantity of beeswax and melted with it an equal quantity of paraffine, and then tried it by all the various tests; but we were greatly surprised to see how very much like pure wax this half-and-half stuff looked; but according to the chewing test it showed the presence of paraffine; but the stuff which we spoke of in our last issue, and which we came very near accepting as pure beeswax, seemed to stand the chew test pretty well. It smelled like real wax; and in breaking a cake of it, it had the regulation granular appearance along

the line of fracture. But the wily chaps have discovered the process of mixing in paraffine of a higher melting-point, and had been "doctoring" it up in other ways so that it seemed to stand ordinary tests. But now since the chemist has declared the wax to be adulterated, we find that, according to the chew test, the wax does not crumble quite so promptly as it might.

Another method of detecting grease, besides the alcohol and water test, is in the use of chalk. Besides a greasy appearance of the cakes, if a piece of common blackboard chalk be scratched across the smooth surface the chalk will slip along without making any marks. If there is no grease present, a white mark will be made. Grease is also detected by the smell and by the character of the fracture. When a cake of such wax is broken, just how this fracture should look can be determined only by experience.

THE SUGARS OF COMMERCE PURE, AND WHY.

MR. C. DAVENPORT, on page 217, gives it as his opinion that sugars, even the best grades of cane sugars, are largely adulterated. Since his article, with my footnote, was made up, I have found Bulletin No. 13, from the United States Department of Agriculture by the Division of Chemistry. I find that several of the United States chemists analyzed 500 samples of sugars obtained in the open market, and that all were found to be pure, with the exception that a few of the lower grades contained an excess of water, which could hardly be called an adulterant. The Chief Chemist goes on to tell of the attempts that have been made to adulterate or counterfeit cane sugars, but all have ended in failure; and he says further, that the low price of cane sugar renders adulteration practically out of the question, even if it were possible. I think we may set it down as a settled fact, then, that granulated sugar—indeed, all of the white sugars—are absolutely pure. We know there are adulterations in other lines of food stuffs; but let us not make the mistake of jumping to the conclusion, without good evidence, that all foods are adulterated.

Perhaps it would be well to state that, in certain grades of *powdered* sugars, especially confectioners', will be found a small percentage of starch. But this is hardly to be regarded as an adulterant, because the sugars in question are designed for making frosting for cake, and the starch is an important element in making good frosting, if I am correct.

Another interesting fact—one that we have generally accepted as true, however—is, that the chemists say, "In general it may be said that, for a given sum, a greater quantity of saccharine matter can be purchased by taking the high-grade sugars."

They admit that *maple* sugar may be adulterated with cheaper varieties of sugar, because "at the present time the resources of chemistry

are powerless to detect such an adulteration. The sugar of the maple sap is identical in composition with that of the sugar cane, sorghum, and sugar beet. No discrimination in such cases can be made by analysis." I think, therefore, we may set it down as a fact, that, when we feed our bees syrup from white sugars, we are *sure* we are giving them the very best pure sweet, and at a price that is cheaper than any thing else on the market.

OUR POSITION IN REFERENCE TO PATENTS, AND TO DIVISIBLE BROOD-CHAMBERS.

I THINK we are misunderstood; and to correct some misapprehensions I will try to set forth our position. Years ago, A. I. R. gave expression to the following:

I am very glad indeed to note the disposition among bee-keepers, of forbearing to copy the works of each other, patent or no patent. The supply-dealer who would unhesitatingly copy something well known to be the property of another, without getting the privilege of so doing, by purchase or otherwise, would very likely lose more than he made, so strong is the disposition of our people to give honor to whom honor is due.

We believe every word of it to-day, and propose to abide by its spirit. We are paying royalty now on some four or five patents, and we may do so on more. We are also paying royalty for the use of certain inventions on which no patent was ever taken. "But," you say, "how about Mr. Heddon and his divisible brood-chamber hive?" We propose to honor and respect Mr. Heddon's rights, so far as we honestly understand them. We never made or offered for sale his hive; but should we ever do so (i. e., such a one as is specified in his patent) it would be under royalty, or such an arrangement as we could make with Mr. Heddon himself.

"But," you say, "how about the Danzenbaker patent, and his hive, as described in this issue?" That is a point which the interested parties will perhaps settle between themselves. But, again, you may ask, "Have you not been trying to evade Mr. Heddon's patent in recommending two Langstroth bodies, one on top of another, as one brood-nest?" Inasmuch as two-story Langstroth hives, through both of which the queen has had access, have been in use many years, we did not, and do not now, think they conflict with Mr. Heddon's claims. Before perforated zinc was known, queens must necessarily have had access to the several parts of the hive.

I understand that Mr. Heddon has criticised us pretty severely in the January number of his *Dowagiac Times* extra. No copy of it has as yet been received at this office, so I do not know what has been said, other than what has been reported to us second hand. In any case, we desire to arrange honorably and amicably for any invention properly belonging to another, that

we may desire to use or manufacture. Any other course would be inconsistent with the sentiment written by A. I. R. in '84, and, more than all, dishonor the Lord and Master whom we are trying to serve.

OFFICIAL CANVASS OF VOTES.

GENERAL MANAGER NEWMAN has sent the following report:

To Members of the National Bee-keepers' Union:

The canvass of all the votes received, up to the time of closing the polls, February 1, 1895, shows that 151 ballots were recorded, as follows:

FOR PRESIDENT—

Hon. R. L. Taylor, 126; Dr. C. C. Miller, 5; G. M. Doolittle, 4; Hon. Eugene Secor, 3; A. I. Root, 2; scattering and blanks, 11. Total, 151.

FOR VICE-PRESIDENT—

Dr. C. C. Miller, 114; G. M. Doolittle, 113; Prof. A. J. Cook, 102; A. I. Root, 101; G. W. Damaree, 77; Hon. Eugene Secor, 38; C. P. Dadant, 31; C. F. Muth, 22; P. H. Elwood, 16; G. W. Brodbeck, 14; G. W. York, 11; E. R. Root, 7; Hon. R. L. Taylor, 7; Mrs. Jennie Atchley, 6; Hon. James Heddon, 6; W. Z. Hutchinson, 4; S. I. Freeborn, 3; R. F. Holtermann, 3; Frank Benton, 2; C. W. Dayton, 2; H. G. Acklin, 2; scattering, 17.

FOR GEN'L MANAGER, SECRETARY AND TREASURER.

Thomas G. Newman, 149; blank, 2. Total, 151.

Although several have expressed their desire for a change in the officers, the members have decided to keep the management in the same hands for another year.

Mr. G. W. Damaree, who has served as vice-president for 10 years, now states, both publicly and privately, that he *positively declines* to act on the "advisory board" for the coming year, as he desires a change in the "official board." This will elect Hon. Eugene Secor, who has received the next highest number of votes. We welcome friend Secor most heartily, because of his eminent ability, influence, and sound judgment. This is a place where the latter is a very necessary qualification, and the sagacity of the Board is sometimes quite severely tested.

Several more decisions from Supreme Courts are needed as precedents, for the guidance of judges in lower courts, and one of these, I hope, is about to be obtained, covering a very important point.

The "Treasury" being in a satisfactory condition, the Union is fortunately in a position to *demand justice*, and protect the rights of its members in the courts of law.

This is a place where "money counts." If the Union were a bankrupt concern, quite powerless to "help in time of need," its influence would be infinitesimal, and itself a laughing-stock for all. The "sinews of war" makes all the difference in the world.

THOMAS G. NEWMAN,
General Manager.

BEGINNING with this issue we shall allow space in our Trade Notes department for inventors to describe some of their recent inventions as they come forth from the Patent Office. In doing so I shall neither indorse nor condemn, but let the inventions stand on their own merit.



HIGH-PRESSURE GARDENING IN THE SWAMP WOODS, OR HAMMOCKS, OF FLORIDA.

Another trip on the cars, and we struck Titusville. I have just been out in the woods with friend Fröscher, and have seen something that I shall not soon forget. Imagine a low piece of ground covered with palmetto-trees, with all other growth cut away. Now imagine open ditches, two or three feet wide, cut through at intervals so as to draw off the water. The bottom is pure white sand; and the water, as it runs through, is as soft as rain water, and as clear as water well can be. These ditches are cut through at intervals of from one to five hundred feet, as may be needed to take off the surplus moisture. The gardener goes to work and gets out every thing except the palmetto-trees. These are all, or nearly all, left standing. They are, on an average, perhaps ten or fifteen feet apart, may be farther. When they have oak stumps difficult to get out, rubbish is piled on them and burned. Then the ground is grubbed up into ridges and furrows, say averaging 25 or 30 inches apart. The kind of soil selected for this sort of gardening is a soft, black, sandy loam. It looks a good deal like what we call woods dirt. On the tops of these ridges the crop is planted. This morning we saw a patch of beans. The plants stood evenly three or four inches apart. They were large enough to have four or six beautiful, thrifty leaves to each plant. As we approached the garden the luxuriant bright green, partly in the shadow of the palmettoes, made one of the prettiest sights I ever beheld in the way of gardening. Closer inspection showed thrifty tomato-plants, some of them nearly a foot high, standing at intervals in the furrows between the beans. These tomato-plants were saved at the time of the freeze by being bent down and covered with the loose dark soil; and now right here is a strange phenomenon. The beans and other plants grow just as thrifty right close up to the trunk or stump of a palmetto-tree as anywhere else. The gardeners say the beans require some sort of fertilizer that the palmetto does not use; and it has been suggested that the palmetto is a sort of air-plant, so that it really takes very little from the soil. But the principal object in leaving these palmetto-trees is, that they keep off frost from the beans and tomatoes, and also keep off cold winds and the extreme heat of the sun. In fact, it makes a sort of shaded greenhouse during the heat of the middle of the day. The gardener works in a shady woods, with damp soft soil under his feet, and pure running water always close at hand. The gardens seem to be in small patches of from one-half to a whole acre. Around this little circle or square, a thicket of woods is left for protection. Of course, no horses are used. The work is all done by hand; but the soil is so light and soft that hoes and steel garden-rakes enable the workman to prepare the ground and keep out the weeds, with comparatively little labor. Besides beans and tomatoes we saw cucumbers, lettuce, radishes, cabbages, onions, and, in fact, almost every thing grown in gardens, cared for in this way.

Friend Fröscher has his gardening ground so arranged that he can shut up the ditches and raise the water to any height, just as we do in our celery-grounds north; and, in fact, he has made quite a little start in producing fine celery, to be shipped to the northern markets

during the months of March, April, and May, when celery is out of the markets in the North. The bleaching is all done with boards. The principal impediment just now is the matter of express charges. For an illustration: Five boxes of celery shipped to Philadelphia brought \$12.00. The express companies took \$9.00 of the \$12.00, leaving friend Fröscher the remaining \$3.00. May be this matter can be remedied when the express companies have more competition, and the work is more fully established. In any place except Florida, so much shade would be more of an objection; but even up north, during our hottest summer months, I have observed that certain garden-plants do better when somewhat shaded, more especially celery.

Now in regard to rotation of crops. The friend we visited, Jas. Cole, has raised two crops of Refugee beans, picked for snap beans, of course, in a season; and he would have had three crops had it not been for the big freeze. He succeeded in harvesting and selling one crop in the fall, cleared off the ground, and planted another; got them just about as far along as those we saw to-day, when the freeze demolished them. Therefore, during ordinary seasons there would be no difficulty in getting three crops. During the very hot weather of the summer, however, they have difficulty in keeping the ground occupied, unless it is with cucumbers, pumpkins, or squashes, or some crop that bears extreme heat. Even sweet potatoes fail to do anything if started before August or September. Friend Fröscher says they do just as well as if planted earlier.

ONE OF THE FLORIDA INDIAN-RIVER HOTELS.

For the first time we find it convenient to stop at a hotel instead of accepting invitations from bee-keepers. We were told several times that we must not fail to visit Rockledge. Now, we did not feel called upon to pay \$5.00 a day; but we chose the moderate price of \$2.50, and are abundantly pleased with the Rockledge hotels at that price. There are five hotels in the place; a beautiful, commodious drygoods store, drugstore, postoffice, etc. At the entrance to the road leading to the Indian River Hotel we found an archway of incandescent electric lights. A little railway for running baggage extends from the depot platform to the hotel. A similar one extends from the steamboat landing to the hotel. There seems to be a disposition down this way to avoid the necessity of horses. Boats on the water, that is almost everywhere; railways and plank sidewalks for Daisy wheelbarrows (and other kinds), seem to be the general plan; and, in fact, without shell roads or some other kind it takes a horse a good while, and even then considerable muscle, to get any kind of a load through the soft and yielding sand. The grounds in front of the hotels are finely lighted by electric lights and gas. Fountains are playing on the green lawns, and people are walking about in the thinnest summer clothing. Women folks are bareheaded at that. Scarcely a breath of air is stirring, and the thermometer is well up toward 80°; and yet, even in the evening we have not seen a gnat or mosquito. The porter says they "don't have any here." Steamers and craft of all sizes are on the Indian River in front of the hotels, with their lights marking out their location. We have not paid out very much money so far on our trip; but I feel just now as if I would almost give \$25.00 to have the Root family here for just an hour. Of course, I should want the grandchildren counted in. Some of the friends may think \$2.50 a day for a single individual is pretty expensive. Well, so it would be perhaps if followed up. But let me give you some of the advantages: The postoffice

is just across the way; stores and places of business, I have mentioned; boats are coming and going constantly at the wharf, right at the door of the hotel; we have beautiful, spacious, airy rooms. The parlor and even the office is carpeted and furnished in excellent style. Every thing is clean, beautiful, and new. The most courteous and civil people are always ready to help and advise. I was obliged to change the tire of my wheel in consequence of running over a catfish on the beach. At least half a dozen different persons offered to help me, or bring me any thing I wanted. Last, but not least, a beautiful, cushioned naptha-launch is in use every day, solely for the benefit of the guests of the hotel, and entirely without charge. I wanted to go over to Georgiana, six or eight miles distant, and they carried me over and waited an hour for me to make my visit.

My good friend O. N. Page, at this place, and his family, were delighted to see me, but scolded pretty severely because I came all the way down to Florida and then stayed only an hour. One of friend Page's grandchildren, a curly-headed, bashful little chap who has commenced going to school, couldn't learn to recite the vowels—a, e, i, o, u, y, because, whenever he got started, he would always run off into A. I. Root. You see, A. I. Root is such a household word at Georgiana. Here we first saw a pineapple-garden, and cocoanut palms large enough to bear; and when we saw some strawberries large enough to be red, friend Page climbed over the fence and picked a berry. Then we told the owner afterward. It seems too bad to hurry by friends who are so glad to see you in this way; but how else shall I ever get around?

Friday, Feb. 1, we found ourselves at Palm Beach. I enjoyed a ride on my wheel for several miles before breakfast. It is daylight here at half-past five, and the earliest breakfast is at half-past seven. I ran down the west coast of Palm Beach through beautiful grounds interspersed with cocoanut palms and various other tropical products. Patches of tomatoes more than a foot high greeted me at every turn. At one point I saw a beautiful garden of cacti. Of course, the frost has marred the beauty of all the grounds more or less, but not nearly so much here as farther north. Orange-trees here have all their foliage, and the fruit is said to be uninjured; but very few oranges are grown in the vicinity of Palm Beach, it seems. The grounds around the great hotel, The Royal Poinciana, are not only beautiful, but are kept constantly neat and tidy. The hotel at Palm Beach I should call the handsomest structure of its kind I have ever seen anywhere. The Ponce de Leon, at St. Augustine, is admired by many, and is called the finest in the world. But what prejudiced me at first glance was to see the breaks in the paint, and unsightly stains running down on what I supposed to be stone work. All over the edifice were glimpses indicating that the building was cement and veneer, and not what it purported to be. The Moorish architecture, I admit, is beautiful. The hotel here is built to represent wood, and nothing else. The wood 'is neatly painted. There are no rusty spots or unsightly cracks caused by the wear and tear of the sun and storms. It is perfectly bright, clean, and handsome. I tried my wheel on the ocean-beach; but the sand seems to be too soft down here. The walks along the shores of Lake Worth at Palm Beach are very fine for wheeling. Along here, as at Rockledge, the shores are mostly lined with a queer rocky formation called coquina. This seems to be all made up of fragments of shells. In many places it is made up entirely of polished fragments, or of shells almost pure white, these fragments being ce-

mented together by what seems to be a transparent cement. It has been suggested it was first made solid by the salt of the ocean, and, after the lapse of time, by some change caused by the sun and air, this salt formed an insoluble compound. The stonework of the Ponce de Leon is mainly of this material. It would seem as if there were fragments of shells enough in Florida to furnish lime for the world. A word in regard to the multiplication of shellfish.

Friend Hart showed us something that looked like kernels of sweetcorn strung on a thread. He said that these eggs were produced by the fish that inhabits the great conch-shells. Each grain of corn, as it appears to be, in due time bursts open, and is then found to be full of little shells not larger than a cabbage seed. These shells grow. I don't know how rapidly, until they make the great heavy handsome shells we find and use so often as ornaments. The animal, when it is alive in salt water, has a neatly shutting lid that it can pull down and be almost absolutely beyond the reach of its enemies. The old mound-builders used these shell-fish for food, for we find the remains of many conch-shells in the oyster-shell mounds, with a hole broken in a particular point to enable them to extract the fish for food.

SHALL I RECOMMEND FLORIDA AS A PLACE FOR A POOR MAN TO GET A LIVING?

In some respects, no. Florida seems to be a camping-ground for rich people—millionaires if you choose. Almost every man who has made a fortune in soap, chewing-gum, or any such commodity, has a winter residence in Florida. There are almost no manufactures or other similar industries, except factories especially for these rich people. For instance, there are ice-factories in every considerable town. Then fishing is constantly going on to supply the great hotels and fine residences. Orange-growing seems to be the one great industry—that is, for a crop to ship long distances. There is no doubt a good opening, and always will be, for gardeners who will furnish extra fine products for the great hotels. Every one who raises a crop, however, must look out that he has a market for all he raises; and he must see to it that he can get a product into the market before it goes to waste on his hands. I should say there is plenty of opportunity to get good wages in most places where one has the energy and strength to work during the hot weather. I warn you, however, that it is the grandest place on the face of the earth to sit on a cool piazza and rest instead of working out in the sun; and if you don't look out you will find yourself giving way to this prevailing fashion. A great deal of the work done is to accommodate tourists and pleasure-seekers. The yachts and launches that are flitting about on Lake Worth right before our eyes, while we take down these notes, are far more for pleasure-parties than they are for business.

This morning at six o'clock the weather was oppressively hot; but by eight o'clock we had a brisk breeze on the water that has several times made me think of putting on my coat. Here for the first time we find cocoanut palms scattered about almost everywhere. Young trees are starting up all through the brush, especially along the bank of the lake. In the little flower-beds in the neat cottage where we are staying are cocoanuts lying on top of the ground, with sprouts from a few inches to a foot or more in length. The smaller ones have as yet no root at all, but those with the larger tops have roots starting out from the other end of the nut, reaching down into the ground. It would seem that they are the easiest things to grow in the world. We are much indebted to

Mr. Wallace R. Moses and Dr. Stites, of this place, for points of information, and many courtesies. When I asked if cocoanuts grew naturally at Palm Beach, Mr. Moses said they did not; that, if he was correctly informed, they originated from a wrecked schooner containing something like 40,000 nuts. These nuts were washed up on the shore, and took root in the way I have described, thus lining the shores with these beautiful tropical trees with their handsome fernlike foliage. These fern-leaves, however, are anywhere from ten to twenty feet long. The nuts hang in great clusters just below where the branches start out at the top of the tree—each nut, of course, being enveloped in its husk. So far as I can gather, however, cocoanut-growing is not as yet a paying industry here. The sharp competition from Cuba seems to stand in the way. The people here gather enough of the nuts for their own use, or for retailing in the Florida towns, and that is about all. In the evening Mr. Moses brought his wife and children to the cottage where we were stopping, and we had a very pleasant visit. Mrs. Moses is quite an enthusiast with poultry and ducks. You know I have suggested that this business could be profitably carried on in Florida. Here are some figures she gave us. During the month of January, just finished, they sold 691 eggs from 58 laying hens, and 607 eggs from 32 ducks. The hens' eggs brought 40 cts. a dozen, and the ducks' eggs 35. This large price was probably owing to the demand for eggs from the large hotels and boarding-houses. Mrs. Moses said if I gave these figures in print I must be sure to state that nearly all of the food for the poultry had to be purchased from the North. They also have to shut up the poultry nights and let them out again mornings, as the opossums and other enemies would be sure to make short work of them.

West Palm Beach has all grown up in one year—at least I am told there were only two houses there a year ago. There are now toward one hundred houses in the place. All kinds of business are carried on. Two papers are published. Beautiful drinking-water is pumped from a fresh-water lake half a mile from the center of the town. The bottom of the lake is of the most beautiful pure white sand. It is about as nice as water can be for any purpose. The pumping-station furnishes an abundant supply for the great hotel, for the town, and for the railroad. Building is going on briskly on almost every street. You can see the carpenter and the owner of the property working together like a couple of brothers, and almost the next day a grocery, barber-shop, restaurant, or printing-office will have out a newly painted sign. Of course, a good many things are pretty crude and unfinished; but the weather is so warm, something that looks like a house is all that is needed. As there is never any mud, it is not a difficult thing to keep the floors and verandas clean. Almost every house has a porch in front, and plenty of rocking-chairs. The latter are generally in use, for almost every one prefers to stay out of doors.

On Saturday, Feb. 2, we found ourselves at the home of O. O. Poppleton, who is so well known to most of the readers of GLEANINGS that a further introduction will hardly be necessary. Here we seem to be right in the midst of the pineapple industry, and this is so strange and unusual that I hardly feel able to describe it accurately, much less teach the people here how to manage their gardening or farming. In the first place, I rather expected friend Poppleton to meet us at the train with some sort of horse and carriage; but he came with a boat. Pineapples are a sort of air-plant that grow in

the clean white sand. When I asked him if stable manure wasn't cheaper than the chemical fertilizers they were using, the question arose, where would they find any stable manure? for, although there is quite a community of people gathered here, there is not one of them who has a horse or cow or pig.

Just at this point we were interrupted by the visit of a boat containing a couple of Indians—one of them a boy of seven, the other a young man of twenty; at least, the latter said he guessed he was about twenty. Although the day is so cold that I have been wearing my fur cap and overcoat on account of the chilly north wind, these Indians were bareheaded and barelegged—in fact, bare almost all over, especially when the wind blew aside their clothing, which was exceedingly short. The little fellow could not talk our language, but he could smile in a way that was quite taking. They were of the Seminole tribe, the remnant of the native Indians of Florida. They stepped out into the water, without the least hesitation, and stood there while we talked. I asked the older one a great many questions. Some of them evidently taxed his learning and intelligence somewhat, for at first he would say he didn't know; and then after studying a while he would give an answer a little at a time. He said he was married; had a squaw of his own; that his name was Billy Ham. He said they had over in their camp a "horse-wagon." I joked friend Poppleton on being behind the Indians in methods of locomotion. The boy had nothing on but a thin calico shirt, and his hair was clipped except a tuft just on top, and yet he seemed to be perfectly indifferent to the brisk north wind. I told friend P. I would give thousands of dollars for such a constitution as these Indians have. They were exceedingly pleasant and friendly, and I could not but admire the manly frankness of the older one, especially his readiness to say he didn't know, when such was the case, and his willingness to give me all the information he could possibly scrape up on any point I was curious about. Although help is needed on the pineapple grounds, and good wages are offered (\$1.50 per day for good stout men), these Indians never hire out, friend P. says. The squaws do the work while the men shoot deer, and then peddle them out among the white people, with their canoes. After he had sold us a half of venison he inquired for oranges and then honey. We sold him some of the latter for 60 cts. a gallon, he promising to bring back the pail. Friend P. says they are straight and fair; have one price for what they have to sell, and always pay down without any attempt to beat down the price they are charged. Billy had a tunic of many colors, with flounces and fancy stitching that was so neatly done a schoolgirl might be proud of it. When I asked him who made it he answered, "Me," pointing to himself; and when I expressed wonder and surprise he said they had a sewing-machine. You see, the Indians are beginning to "catch on" to the latest form of civilization. The men are doing the women's work, and the women are doing—well, we don't know what they are going to do when they get settled down to it. Now, the Bible says it is wicked to covet; but I want that seven-year-old boy more than I have wanted any thing else in a long time. I feel just as sure I could bring that boy up, God helping me, so he would be a good boy and a Christian, as that I could grow pineapples if I lived next to friend Poppleton. Well, suppose we get back to the pineapples, as we are pretty nearly around to it.

When I asked friend Poppleton if stable manure wouldn't be cheaper than chemical fertilizers, he laughed at me and asked where they

would go to get stable manure. In the first place, there are no stables; second, there are not any horses anywhere within miles, and there are no roads on which to travel, even if there were horses. Neither are there any wagons. Every house is planted by the river, and in front of the door there is a wharf or landing where one or more boats are tied up. People go everywhere in boats. They ship their products in boats. The oranges and pineapples are all wheeled down to the landing in wheelbarrows; and, by the way, the manufacturers of wheelbarrows will please take notice right here. They are to make some with a light steel tire at least four inches wide. Furthermore, this steel tire, and, in fact, the whole wheel, is to be galvanized so it will stand the salt sea-water. There are miles and miles of country down here where wheelbarrows are almost the only vehicles used in gathering crops, and they should be made so they can run over the soft sand, and go clear down to the beach and into the salt water.

A LETTER TO MY SUNDAY-SCHOOL CLASS; WHAT I FOUND IN THE SALT WATER.

It was the last day of February that I stepped on board a little steamer to ride from Punta Gorda to Fort Myers. Our route lay down through Charlotte Harbor, around Pine Island, and finally up the Caloosahatchee River. While most of the passengers proceeded to pass the day reading papers, talking politics, etc., I decided to find out what I could of the inhabitants of the tropical deep. I felt sure that, by practice and study, I could learn to see fish in the water, like the old veteran fisherman, and in a little time I was rewarded by seeing great numbers of a round light-colored fish which the captain said were "needle-fish," a species of gar. These dart about with incredible rapidity, and one must get his eye trained before he can follow them. They have a long ducklike bill, and the fish are from one to two feet in length. As the boat comes along, they, in their fright, often run right in front of it, and sometimes even jump out of water. Very soon I thought I could in many places see the bottom, and the captain told me I was right.* The sea-water is often very clear and clean, having only a greenish tinge; and the pure white sand at the bottom makes it very easy to see any object. Think of looking over the side of a steamboat, and seeing the bottom as you go along, and seeing also almost every object quite plainly. I soon found crabs and turtles; and finally I started back in fright, for a hideous creature as big as a cooking-stove, with spotted wings, came almost up to the surface, and seemed to care very little for me or the steamboat. His tail stuck out like that of a turtle, and his wings were painted as gay as if made of curtain calico. The captain said it was called "whippa," and is near akin to the order of devil-fish.

A school of porpoises came next, and they evidently proposed to give me a better chance to get acquainted. They rolled and tumbled partly out of the water until I became very anxious to see the whole of one at once; and just about then one of them seemed to say, "All right; we will do almost any thing to accommodate 'brother Root,' since he has come clear down here to see us." And, suiting the action to the word, he hopped *clear* out of the water, going *out* head first, and going back in head first. Now, boys, think of a fish as big

as any one of *you* doing that, and you get something of the idea. About this time I said to the engineer I would give a silver dollar to see one of these chaps up close; and almost as soon as I had spoken, two of them turned summersaults so close to me I could easily have touched them with a common fish-pole. Well, now, even this was not all of the "show," for I had hardly taken my position again at the prow of the boat, down near the water, when I saw two beautiful cream-colored fish, just before the boat, scudding along like a nicely matched pair of colts; they were almost as large as horses, and one could easily imagine they were pulling the boat exactly as horses pull a buggy. I thought they were running in front of us, as cows get frightened and run before a locomotive; but the mate of the boat said they were only big porpoises "at play," and he says they often run in front of the boat and play in just that way. Pretty soon the captain asked me to leave my fish and come to dinner; and then the cook of the boat said he had prepared some "speckled trout" expressly for "Mr. Root's dinner;" so you see I had a nice time all around. For dessert the cook brought us some very fine guavas. If you don't know what a guava is, just imagine a nice strawberry as big as a large peach, and you will have it pretty nearly. They grow on trees, and the trees bear fruit almost every month in the year.

I spent the whole day in the way I have told you, and enjoyed every hour of the trip. One secret of the enjoyment was, that I made friends with every one of the five men who run the boat. Some of the passengers came to see the wonderful things I was finding down in the "briny deep," but they said they couldn't see a thing. You see, they hadn't the patience to sit down to learn how. If we only look carefully we shall find—

Sermons in stones, books in running brooks,
And God in every thing.

Everybody is catching fish down here. The mate told me a party of "women" who stood on the dock and threw in their lines caught *two hundred* "big ones" in about two hours.

A. I. R.'S NOTES OF TRAVEL: DOES HE PAINT THE PICTURES IN TOO ROSY COLORS?

Mr. Ernest Root:—Excuse my freedom in offering a few words in regard to the last travels through Alabama, Georgia, and Florida. I am surprised to see that country so enthusiastically—yes, "eccentrically" palmed off. It is "just slick," that "Dixie Land," etc.; and this, too, notwithstanding the disastrous drouth, hard freezing, poor and sandy soil, poor houses, no windows, etc. It is ridiculous. I have seen houses in the South made of *barrel-staves*, and many other things according. I am sorry that your father started out in such high "tune," "big-bug like." He has forgotten all about the thousands in Florida who lost nearly all they had by the last disastrous frost, when he speaks of Jacksonville. That's all right for rich men; but how is it for those whose means are limited, who are encouraged by such writings? I could send you letters from Florida, from men who live there, that would open your father's eyes. One of my neighbors sold his nice home here, on account of just such reports, and went to Florida last fall, and is now back again, after spending nearly all he had. I have also seen the same thing through Texas this winter, and that is why I write this, not to find fault with your father, for he has written many good articles, from which I have learned much.

I was at the midwinter convention at Mrs. Atchley's, at the time of the hard freeze. The

*It may be well to mention that our little steamer is made for shallow water, and draws only about six feet; therefore, when the water is from seven to ten feet deep, and *clear*, I can see almost every fish, little and big.

"Sunny Southlanders" didn't have much to say, but all closed up to the fireplace.

I remember you and your mother well, from seeing you at the World's Fair convention. It struck me you were "mother herself" in looks, outside and inside. C. THEILMAN.

Theilmanton, Minn., Feb. 8.

[This, as our readers will see, was forwarded to A. I. R. himself, who replies.—E. R.]

Many thanks, good friend T., for your timely caution; but I must think you overestimate the danger. If you read my notes carefully you will see I mentioned the poor dwellings with wind blowing under the floors, etc. Surely no one will think of "pulling up stakes" and rushing down to "Dixie" on account of the pen-picture I gave Huber. It was mostly to contrast the difference between Dixie, and snow a foot deep and zero, that I wrote it. Suppose I should, in my travels anywhere (say through Minnesota, for instance) write up all the disagreeable things, tell of the tumble-down buildings, deserted farms, untimely frosts and drouths, etc. Would anybody want to read such "travels"? and would it do any good? Even our pleasant town of Medina, where I have lived, grown, and prospered, is often called the "meanest place on earth;" "farming doesn't pay," and all kinds of business are "overdone," to people who always wear that kind of "spectacles." Now, Florida is much like Medina, unless you look for its bright side, and take in its redeeming features. There are lots of tumble-down houses, slipshod gardening, and dilapidated orange-groves. By the way, a neglected orange-grove is about as *sorry* a looking place as one can well imagine. Perhaps there never was a time more unfavorable for writing up Florida than this very winter I have chosen; but you see by my notes I still find a world full of interesting things—a world full, too, of opportunities to go to work and get *good pay* for your work. Back of it all, I see continually the hand of the *unseen God*, the hand of the *living Father*.

Thursday Feb. 7.—During the afternoon at Gifford, Florida, the thermometer stood at 72°. Next morning at sunrise it was down to 22°—a fall of *fifty degrees* in 12 hours! The greater part of all the garden stuff in the State was killed outright, the *second time*, in just one winter. People had just begun to recover, and to get courage, since their December losses, and now here we are again. I say *we* for I feel as if I were a part of Florida now. Shall I write this up as a part of the bad features of Florida? Of course, it indicates that *now* and *then** we must expect disasters down here. But, dear friends, crops fail and losses occur *everywhere*.

Since I have been a Christian my disposition is to see sunshine, even through black clouds; and my travels in any land will take in naturally the sunny features; but I think that, if you look carefully, you will find I have faithfully mentioned, also, most of the unpleasant things.—A. I. R.

HOME AGAIN.

Here I am, March 13th, back again in the land of mud, dampness, and frost. Florida is gone—gone in a brief 48 hours; gone with its clean sand and sunshine; gone like a bright dream. I have traveled through it something like 1500 miles, and didn't find mud enough to scarcely need to brush off my pant-legs once. Mrs. Root will tell you it *must* be a wonderfully clean place. True; but you can't get any

*I believe the Weather Bureau will bear me out in the assertion that no such winter has occurred here before in *fifty years*.—A. I. R.

crops down there like those here on our Medina clay, without a tremendous sight of fertilizers of some kind, and you have to keep putting on the fertilizers for every crop you raise.

After leaving the East Coast I visited in succession Sandford, Oakland, Tarpon Springs, St. Petersburg, Manatee, Tampa, Thonotosassa, Lakeland, Bowling Green, Avon Park, Kissingen Springs, Homeland, Bartow, Punta Gorda, Fort Myers, Orlando, Tavares, Mt. Dora, Blue Springs, Orange City, Lake Helen, Palatka, Lake City, and Green Cove Springs. The only place where I found orange-trees full of foliage, fruit, and blossoms, was at Ft. Myers; and I made in that vicinity a still bigger "find" for bee-keepers—at least, I consider it so. You have all doubtless noticed what our good veteran friend Poppleton has to say about the destruction of the black mangrove on the East Coast. Well, imagine my feelings when the men who ran the steamer told me the rank vegetation which covers the numberless islands on Charlotte Harbor was *black mangrove*, and almost nothing else. As nearly as I can learn, but few bee-keepers have ever located on or near these islands; but I am told the woods is so full of wild honey it is brought in in large quantities. We shall at once open up correspondence with all the bee-keepers we can find in that vicinity. Here seems to be a chance for the migratory brethren. This point is so far south, the mangrove seems to be entirely unharmed. My Florida notes will, in full, go through several months yet. I shall be glad to answer any questions that my notes do not answer.

KIND WORDS FROM OUR CUSTOMERS.

The much-talked of Crane smoker is received, and was thoroughly tested, which resulted in proving all that is claimed for this pride of the apiary.

Reinersville, O., Feb. 25.

J. A. GOLDEN.

Order No. 35,286, you shipped Feb. 8. I received Feb. 28, 5 boxes. They are in good shape. The foundation is very nice, good color—a great deal better quality than I have been using. The freight was very low—78 cents. I shall put the hives together next week, then I will write you how I like them.

Wm. R. PAGE.

Avon, N. Y., March 1.

BEST LOT OF BEE-FIXTURES HE EVER HAD.

Goods came to hand all right. Some of the boxes were split pretty badly, and the lamp was broken; but I must say they were the best lot of bee-fixtures I ever had. Everything fit nicely. I am 67 years old, and have had bees since I was a boy.

Cline, Tex., Feb. 2.

W. H. BEASLEY.

We have sent A. I. Root one of the latest improved queen-traps. Those who purchase traps of him the coming season will get the most complete queen-trap ever used. The new trap will soon be illustrated and described in GLEANINGS.

A. I. Root has sold more of our drone-and-queen traps than any other firm. We predict that, in the near future, the Root's will be about all the bee-supply dealers in the country. Medina will be the head center, and their supplies will be found on sale in every State in the Union. They now have a branch supply office in the State of Florida.

"Quality, not cheapness," is their new motto. That has the right ring to it. Success for Bro. Root was established years ago.—*American Apiculturist*.

THAT CAR OF BEE-GOODS, AND HOW THEY PLEASE.

The car of bee-keepers' supplies has arrived, and is unloaded. I have not had a chance to check up all the small articles; but so far as I have checked, every thing is O. K. The hives and sections are even nicer, if any thing, than the last car was, and we are all delighted with the "bee notions," as we call them. I think you can count on an order for the next car of goods I need.

Wharton, Tex., Mar. 8.

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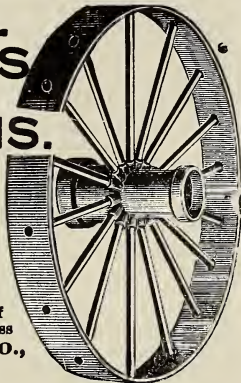
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GEO. E. CRAIG, Zimmer, Franklin Co., O.

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